M. F. Palmer

THE

GENESEE FARMER,

A MONTHLY JOURNAL DEVOTED TO

AGRICULTURE, HORTICULTURE,

DOMESTIC & RURAL ECONOMY.

ILLUSTRATED WITH ENGRAVINGS OF

FARM BUILDINGS, IMPLEMENTS, DOMESTIC ANIMALS,

FRUITS, FLOWERS, SHRUBS, &c.

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AGRICULTURAL CHEMISTRY.

The winter months are particularly favorable to reading and study, and every farmer should endeavor to master some of the principles of agriculture, which the rapid progress of science renders intelligible, and the press and the public mail have dropped into his hands. Chemistry has, confessedly, done more than any other science to place the cultivation of the earth on a safe and enduring basis; and to it agriculturists in all civilized and enlightened nations are now looking for still more important discoveries, and more valuable aid in the prosecution of their noble art. The husbandman is not expected to be deeply learned in the technicalities of any natural science; and in treating of them for his perusal, one should be careful to avoid, so far as he may be able, the use of strictly professional terms. This we shall do, and when they occur, a plain deffinition will be given.

Chemists have found reason to believe that all matter, without exception, is endowed by its Creator with an ever-active *force* which tends to the formation of compound bodies. What are called chemical affinity, attraction of cohesion, and gravitation, are so many visible manifestations of this natural power. A knowledge of the laws regulating this force, as they affect all the elements of soils and their vegetable and animal products, may be regarded as the Science of Agricultural Chemistry.

When iron is exposed in a damp atmosphere, it *rusts;* and the observer witnesses a common but highly interesting phenomenon. There evidently exist forces in the atoms of the metal and those of oxygen, in the water or atmosphere, which cause these gaseous and solid bodies to unite and form a permanent compound of vital air and a metal called the red oxide, or per-oxide of iron. By this union of unlike atoms their respective forces are not annihilated, but are *quiescent*, and will be active and ready to act again so soon as heat or any other disturbing element shall separate the oxygen from its *base*. It is important in the study of natural laws, to keep in mind the fact that a force may be at *rest* and not lose its existence. It would be idle to speculate in what form a quiescent force exists; for we really know nothing of the ultimate atoms of matter itself, and need not attempt to fathom the mystery of gravitation, or of any inherent force displayed by the *molecules* of the material world. Suffice it to say in this connection, that matter organized in the tissues and vessels of living plants and animals, is not deprived of the natural forces which characterize it when wholly disorganized, and in the form of common air, water, and metals, or earths.

The development of latent or chemical forces in the elements of crops and soils, is a point to be well considered. Nothing that the husbandman can do to impart activity and progress in those changes which prepare food for plants, is of more importance than *the minute subdivision of all solids to be operated upon.* To illustrate the fundamental principle of all tillage, it may be stated that a mass of iron shows but a slight tendency

to oxidation (rust;) but when minutely divided, it can not possibly be brought even in contact with atmospheric air at a low temperature, without becoming *red hot*, and at the same time being converted into an oxide. Cobalt, nickel, and uranium possess the same property. (MULDER and MAGNUS.)

The condensation of atmospheric air in the minute pores of an exceedingly fine mineral is doubtless the source of this high temperature. Finely pulverized charcoal has been made to condense gases so much that the latent heat evolved in the operation has set the coal on fire. It is a law of nature that when a body passes from a rarer to a denser medium it gives out heat—*i. e.*, heat which was insensible becomes sensible by the simple compression or consolidation of any substance. Thus, when cold water is applied to cold caustic lime, the liquid becomes incorporated with the lime in a solid form and gives up a portion of its latent caloric, or heat of fluidity. In a similar manner freezing water in a cellar, which without the water would freeze potatoes and apples, warms it sufficiently to prevent their congelation. In this instance the sensible heat is given off from the water when transformed into solid ice. When vapor and water are converted into snow in winter, they warm the air sensibly, which elevation of temperature lasts a day or so after the fall of a deep snow. On the other hand, the expansion of water in the process of evaporation absorbs active or sensible heat, and generates cold as it renders heat quite insensible. This law is too familiar to need illustration. Heat and cold are among the most effective chemical and mechanical agents, and their influences on all bodies to expand or contract their dimensions, as well as the peculiar functions of solar light, deserve the closest study.

If a large crystal of salt or sugar be crushed into one impalpable powder, its solution in water is greatly promoted. This fact illustrates a general law, and one that prompts the grinding of much grain, the pulverization of the soil, and about half the labor of the agriculturist. No solid food of animals can pass through the walls of the intestines into the *lacteals* (milk-ducts) and the blood vessels, which is not substantially dissolved in the gastric juices; nor can cultivated, or other plants, subsist on insoluble earthy atoms. Hence, all the circumstances that favor or retard the solution of bodies in tilled land, or living systems, have a high practical value, and a scientific claim to attention. Bodies in solution are in a very favorable condition for the play of chemical forces, whatever they may be. The chemical phenomena witnessed in the cells of plants, in the production of wood, starch, gum, sugar, oil, albumen, casein, and gluten, appear to be governed more by physical than any known vital laws. The further the chemistry of vegetable and animal physiology is extended, the greater becomes human power over all the phenomena of life. We have long believed, and taught, the doctrine, that defective nutrition, and most diseases, from our simple liver-complaints and chills and fever, to the yellow fever, cholera, and plague, arise from the violation of laws which chemistry would yet fully elucidate and prevent. Even scrofula and consumption are now cured by phosphate of lime (bone earth) prescribed on strictly chemical principles, or pathology. The following are cases in point:

"In the first number of the New Orleans Monthly Medical Register, we find an article by Professor STONE, on the virtues of 'Phosphate of Lime in Scrofula and other depraved states of the System,' which is of some moment. It was suggested by an Essay in the London Lancet, on the 'physiology and pathology of the oxalate and phosphate of lime, and their relation to the formation of cells.'"

"'The conclusions of the author,' says Professor STONE, 'are based upon careful chemical research and results from the use of the remedy. His researches show that in man, as well as in vegetables and inferior animals, phosphate of lime, as well as albumen and fat, is absolutely essential for the formation of cells, and he considers that many of the pathological states of the system depend upon a deficiency of this salt. The affections in which it is advised are ulcerations dependant upon a general dyscrasia, and not a mere local affection; infantile atrophy, in those suffering from rickets and consequent diarrhœa and tuberculous diseases, particularly of the lungs in the early stages.'

"Struck by this article, Prof. STONE tested it, and he thus describes three cases in which its virtues were very obvious. The first was that of a slave who was admitted to the Professor's Infirmary in

July, with a disease of the nose, the whole system showing great progress in scrofulous decay. The usual remedies were unsuccessfully applied until August, when cod liver oil was used, but the disorganization of the stomach was increased by it. The phosphate of lime was then applied, eight grains three times a day. Its good effects were soon apparent. It and the oil were therefore administered together, and the patient soon was restored to health.

"The second case is that of a young lady aged 24. Her disease was one of 'unmixed phthisis,' which might have been expected to terminate in the course of a few months fatally. The upper part of both her lungs was filled with tubercles, and in some places were beginning to soften. The case was evidently a bad one. The treatment of cod liver oil was at first used, but without marked improvement. The phosphate of lime was then administered with the oil, and the result, as in the case of the negro, was soon apparent. The patient was rapidly getting well.

"The third case was that of a child seven years of age, in which the phosphate of lime was used with complete success.

"We can only refer briefly to these cases for the purpose of directing attention to this subject. Before the dreadful diseases which they describe, scientific men have stood abashed. That there is some remedy for them we can hardly doubt; and this may, if a new thing, be the desideratum which science is in search of."

The chemical forces in blood, and the separation of bone in one set of cells, muscle in another, nerves in a third, fat in a fourth, bile in a fifth, urine in a sixth, and all other secretions, *from the same blood*, are now being investigated with an acuteness and energy never before equalled. Powerful microscopes, delicate balances, reliable re-agents, greater experience, tact, and expertness, in all necessary manipulations, promise a more rapid advancement in pathology and organic chemistry in future. To the practical farmer, the application of chemical knowledge to the feeding of cultivated plants, will probably be most intelligible, and therefore satisfactory and useful. Among the many substances that chemists have suggested as likely to fertilize the soil, the nitrate of soda, or "cubic nitre," is not the least important. It has the merit of being much cheaper than the nitrate of potash, (saltpetre,) and is, by some wheat-growers, regarded not inferior to that valuable salt. In an agricultural point of view, ammonia, which is a powerful alkali, and nitric acid, which is an intense acid, (aquafortis,) have very similar properties. Both yield available nitrogen to growing plants. Ammonia is formed by the chemical union of 14 parts of nitrogen with 3 of hydrogen; and nitric acid is formed by the chemical union of 14 parts of nitrogen with 40 of oxygen. 17 is the equivalent number of ammonia, and 54 that of nitric acid.

In the second volume of the Journal of the Royal Agricultural Society of England, there is an account of an experiment in which 42 lbs. of nitrate of soda were drilled in with seed wheat upon a quarter of an acre. The result was a gain of 2 bu. and 2 pecks in grain, and 129 lbs. in straw. The wheat weighed 155 lbs., and the entire gain in both wheat and straw was 284 lbs. In this experiment, a pound of the salt gave over 3.¼ lbs. of wheat, and over 3 lbs. of straw. In another series of experiments with this salt, it gave a small addition to the yield of grain, but a large gain in straw. In another experiment, with cubic petre and common salt, 112 lbs. of each being sown broadcast on an acre of wheat early in the spring, the gain was 4.½ bu. (from 21 to 25.½); and in another, 8.4 bu., or from 19 to 27.4. As soda is a much cheaper alkali than potash, it is highly important that experiments be made in this country to ascertain how far soda can take the place of potash in organizing starch in potatoes and the seeds of cereals, such as wheat, maize, barley, and oats. Any County Society can make a valuable experiment with carbonate of potash, (common pearlash,) and carbonate of soda, on the growth of potatoes, corn, or wheat, for five dollars. Let all the money be paid for equal quantities of the salts named, and let these be pulverized and mixed with four times their weight of fine dry loam. Now, get a little cup that will hold about two ounces of this compound, and apply a cup full to each hill of potatoes, or corn, spreading it over at least a square foot of surface, at the time the seed is planted. The plan should be to give one or two rows of potatoes or corn a given quantity, say 16 lbs. of soda, and a like weight of potash to other rows. Leave two rows of corn or potatoes between the

manured ones, to which nothing is to be applied. The object is simply to determine, so far as one experiment can, the relative value of potash and soda as food for the plants. Sea-water contains thirty times more soda than potash; and the first named alkali may be economically extracted from common salt, by the aid of caustic lime, in a compost heap. The chemistry of this operation, as well as that of many others, will be explained in the course of the present volume of this Journal.

EUROPEAN AGRICULTURAL STATISTICS.

The following interesting statistics are chiefly compiled from a French work on Political Economy and Statistics for 1851:

WHEAT AND RYE PRODUCED IN THE DIFFERENT COUNTRIES OF EUROPE, IN HECTOLITRES.*

States.	*Wheat.*	*Rye.*	*States.*	*Wheat.*	*Rye.*
France	80,143,783	51,835,466	Russia	19,000,000	149,750,000
Great Britain	35,473,000	1,500,000	Mecklenburg	622,460	1,200,000
Belgium	4,091,916	5,423,606	Hanover	1,320,000	2,000,000
Prussia	6,684,000	45,876,000	Saxony	1,100,000	2,337,500
Bavaria	2,770,697	6,418,514	Wurtemberg	6,154,821	540,568
Baden	2,570,300	510,600	Hesse	1,915,000	2,200,000
Switzerland	1,000,000	1,200,000	Other German States	1,250,000	3,500,000
Sardinian States	3,800,000	1,000,000	Austria	29,100,000	88,710,524
Spain			Tuscany	1,500,000	500,000
Netherlands	1,999,902	1,597,906	States of the Church	8,000,000	
Luxemburg	220,000	350,000	Two Sicilies	19,997,700	
Denmark	840,000	4,480,000	Other Italian States	3,500,000	
Schleswig-Holstein	886,200	1,692,600	Portugal	3,510,000	2,528,500
Sweden and Norway	342,663	5,947,820	Greece	275,000	

In some of these countries, barley, oats, maize, buckwheat, peas, and beans, are important staples.

It is a note-worthy fact that, while we obtain the official agricultural statistics of most of the nations of Europe for 1851 before the close of the year, those of the crops grown in the United States in 1849, and taken by the census of June, 1850, we shall not get till after June, 1852. The fault is in a Congress wholly devoted to party politics. Every sensible man knows that it is not necessary to wait three years after the harvest of 1849 before the public can learn the amount of said harvest.

The careful study of agricultural statistics is both instructive and interesting, after one has acquired a taste for researches of this kind. If we convert the *hectolitres* of wheat and rye grown in France and Great Britain into bushels, and consider each in reference to the agriculture of both nations, it will be seen that while England excels in *tillage*, France greatly excels in *husbandry*. France produces 224,402,453 bushels of wheat a year, and 145,139,305 bushels of rye. England produces 99,324,400 bushels of wheat, and 4,200,000 bushels of rye. To produce their comparatively small amount of grain, the poor husbandmen of Great Britain require about 230,000 tons of imported guano and an immense quantity of oil cake, used first to feed cattle and sheep, and then as manure. The good husbandmen of France require very little guano or oil cake from abroad, while they annually export to England one-fourth of the bread-stuffs imported into that country. The secret of French and Belgian success in grain-culture is this: Their cultivators make the *excreta* from millions of people worth an average of five dollars a head per annum, as manure. At this rate, allowing the fertilizers from six millions of persons to be lost in France, and those yielded by thirty millions to be saved, their commercial value to the nation is $150,000,000 a year. The general saving of the elements of wheat, in France, is good husbandry, whatever may be their system of tillage.

On the other side of the Channel, the twenty-nine millions of people habitually throw away the fertilizing elements contained in their daily food. Hence the necessity

* One *hectolitre* is two and eight-tenths bushels.

of importing into Great Britain so much grain, flour, provisions, and guano. Some night-soil is saved, perhaps five or ten per cent. of the quantity that might be; but the loss of that from twenty millions of persons, is equal to casting $100,000,000 into the sea. Of our population, now twenty-five millions, no class saves fertilizers equal to the consumption of one million people, or four per cent. of the whole, so that our annual loss exceeds $100,000,000 from this source alone. But we habitually waste the droppings of our domestic animals, and, unlike England, export vast quantities of cotton, breadstuffs, and provisions, which added to the elements of crops washed out of the soil in the process of tillage, and by the action of our hot summer sun, bring up our loss, otherwise than in food consumed, to at least another $100,000,000 a year. More than 20,000,000 acres are devoted to the production of annual harvests, in the Middle, Western, and Southern States, whose crops are sent out of the States in which they are grown. To apply a ton of guano to each ten acres thus deprived of the things that make grain, meat, cotton, and tobacco, allowing only 200 lbs. to the acre, would demand the annual importation of *two million tons*. This would cost in our seaports $40 per ton, or $80,000,000. But there are at least 60,000,000 acres being gradually impoverished in the United States; and a single dose of manure, equal in value to four dollars per acre, involves an outlay of $240,000,000 a year. By carefully husbanding manure, the farmers of Belgium, after feeding the densest population in Europe, have a considerable surplus of meat and grain for export. It is only the people who speak the English language that fail to appreciate this obvious truth:—*The inhabitants of Cities are bound to feed the land which feeds them.* The citizens of London and New York do not possess common sense enough to comprehend one of the plainest laws of Providence. Our rural economy is anything but *economical*, and that of Great Britain is but a shade better.

LIVE STOCK IN SEVENTEEN OF THE LARGEST NATIONS OF EUROPE IN 1851.

	Horses.	*Cattle.*	*Sheep.*	*Pigs.*	*Goats.*	*Asses & Mules.*
France,	2,818,196	9,936,536	32,151,430	4,910,720	964,300	787,330
Great Britain,	1,500,000	6,865,000	32,000,000	4,000,000	210,000	——
Russia,	13,660,000	22,120,000	89,000,000	6,300,000	1,550,000	——
Austria	2,827,130	11,471,623	33,767,000	7,000,000	443,000	92,908
Prussia	1,570,000	5,042,000	16,260,000	2,116,000	395,000	——
Belgium	250,000	912,740	780,549	421,208	85,000	——
Turkey	1,950,000	8,200,000	14,320,000	300,000	1,500,000	——
Spain,	800,000	2,000,000	18,000,000	2,000,000	4,000,000	900,000
Denmark	325,019	834,173	1,164,544	157,599	——	——
Bavaria,	349,690	2,625,294	1,899,898	842,851	107,226	——
Sweden and Norway,	501,378	2,474,615	2,854,180	892,488	177,470	——
Hanover,	257,300	794,000	1,631,000	201,000	8,000	——
Wurtemberg	106,350	1,186,780	676,659	167,219	27,947	——
States of the Church,	64,500	171,800	1,256,000	246,200	123,300	5,500
Two Sicilies,	150,000	400,000	4,000,000	2,000,000	1,000,000	210,000
Portugal,	317,000	740,000	4,980,000	720,000	1,400,000	——
Greece,	120,000	900,000	2,500,000	40,000	300,000	——

THE WINTERING OF STOCK.

THERE are three facts connected with the wintering of stock which ought to be well considered by every one who keeps a cow, horse, pig, or sheep.

1. It is a fact that the production of animal heat in the body consumes more than half of the food taken into the stomach.

2. It is a fact that external warmth serves as an equivalent of food to an extent which is of great economical importance.

3. It is a fact that the aliment daily taken into the systems of all animals, should be precisely adapted, by its chemical composition and solubility, to the natural wants of every organ and tissue in the living being.

To the above, we might add other truisms in the keeping of domestic animals, did not long experience admonish us that a few facts, clearly stated, are more useful to a majority

of readers, than any attempt to express in one article all that ought to be said on any important topic in husbandry. It may be asked how we know that more than a moiety of food eaten by a horse, ox, or sheep, goes to create animal heat? This is our answer to that question: By the analysis of hay, oats, corn and corn-stalks, and other food of stock, we learn the amount of carbon, (coal,) oxygen, hydrogen, and nitrogen, that 100 lbs. contain. It is known that sensible heat is always generated when carbon, in vegetable substances, (of which wood and coal are familiar examples) combines chemically with oxygen, as in combustion. Now, nearly two-thirds of the carbon taken into the stomach in forage, roots, or grain, passes out of the wind-pipe, in combination with oxygen, (vital air,) as carbonic acid. It is just as impossible to burn 20 lbs. of hay in the system of a horse, or cow, and not have it evolve heat, as it would be to burn the same hay in a stove without so much as either warming the fuel or the stove. There is really no more mystery about the production of animal heat through the agency of respiration and digestion, than there is about the heat in a steam boiler; but the needless waste of animal heat, and of the fuel that generates it, in the six coldest months in the year, in this country, amounts to a loss of many millions. To prevent this loss, is the main object of our present writing. It can be done by providing warm and comfortable stables, houses, and sheds, for all kinds of stock, including poultry and honey-bees. By ceiling stables in wooden barns inside with rough boards, and filling the space between the outside boards and the ceiling with dry tanbark, or dry horse dung, we have made them sufficiently warm, so that no manure would freeze in them except in extremely cold weather. In basement stables, surrounded by thick walls laid in mortar, and covered by a floor and hay or grain, a word of caution is necessary, not to forget due ventilation. A great many horses, cows, and oxen, are injured by being kept in badly ventilated stalls and stables. Let it never be forgotten by persons sleeping in tight rooms, and by those that rear and keep domestic animals, that the air expelled from the lungs in breathing, *always contains one hundred times more carbonic acid gas* than it did when it entered them. This poisonous gas should have a reasonable outlet from all stables, especially where many animals are kept in one apartment. Nothing but knowledge will enable a farmer to combine warmth and ventilation for the health and comfort of all that breathe, whether in his own dwelling, in stables, pig-styes, bee-hives, or poultry houses. In this, as in all other matters, extremes are to be avoided.

In wisely selecting the food which is best adapted to the natural wants of neat-cattle, milch-kine, working teams, sheep, and poultry, we all have much to learn. Agriculturists in the Southern States do not appear to understand the art of preparing forage plants, such as cornstalks, straw from grain, grass, or hay, for consumption, so well as do the cultivators of the North, where long winters compel more attention, and give greater importance, to the subject. We have been particularly impressed with the neglect of corn, in Maryland and Virginia, a month after it should have been cut up at the roots with a view to make forage of the stems, leaves, and "shucks," for the stock. That is to say, we have seen corn so cut up there after several frosts, and when dead ripe, and a whole month too late, according to the maturity of the crop. All cereal plants undergo important chemical changes at the time of, and immediately after, the ripening of their seed. What these changes are will be hereafter explained, under the head of Agricultural Physiology. At present, we will assume that the farmer has feed enough for the animals he intends to winter; and if he has not, he cannot reduce his stock, by the sale of a part, a moment too soon.

The value of cutting feed, such as straw, cornstalks, and hay, is a matter on which we all need more light. It is the general belief that it pays well for the labor; but will it pay to cut good hay, even for working cattle? If one has hired help, and nothing else for them to do while cutting hay, doubtless it will aid digestion to cut up the stems and leaves of forage plants. And it may be good economy, as is often done,

to use a horse-power for cutting both dry and green feed, such as roots and straw. We have cut the feed of fifty cows in that manner, and thought we realized a profit in the operation; but we usually poured boiling hot water, drawn from a heater, over 100 bu. of cut cornstalks, hay, or straw, in a water-tight box, and let it remain till cold and eaten. This mass of hot water greatly promotes the extraction of all the nutriment there may be in stalks, leaves, and shucks or husks, by the organs of digestion. Meal, bran, or shorts, are mixed with the cut feed before the water is applied; but in feeding cut carrots, (of which we have fed a good many,) they were given raw and separate. One hundred pounds of carrots ought to yield at least fifty of milk, in good cows. The production of milk, however, is an operation of which we shall speak at another time. How to make flesh and fat to the best advantage, are points of some interest to those who keep animals and prepare them for the butcher. Our own observation leads to the conclusion that it is better economy to boil corn, peas, and barley, for fatting hogs and cattle, without grinding, if one has to pay from 8 to 16 per cent. of the grain to the miller. Cooking food, like "homony," renders all its nutriment available, and grinding can do no more, and one loses the toll, whatever that may be. Nature maintains animal heat for chemical purposes, or, to aid in transforming vegetable into animal tissues. Cooking food is a step in the same direction, for it effects important chemical changes in the substances cooked. How far hot water may be economically used in preparing forage, seeds, roots, tubers, apples, and pumpkins, for the consumption of fatting cattle, must be decided by future experiments. Whatever feed domestic animals receive, it should be given them at stated periods of the day; and all that is left, should be promptly removed, that the animal be not allowed to breathe upon it and taint it with the foul exhalations from the body. One of the most common errors in wintering stock, is the notion that they should not gain as much in weight when kept up, or fed in a yard, as when running in a good pasture in summer and autumn. Every day that a pig, heifer, steer, lamb, or colt, lives without growing, involves the owner in expense and probable loss. The art of stunting young animals is more practiced than studied; and the principles of making Shetland ponies, and such wee-bits of oxen, cows, and hogs, as one meets with in some States, ought to be known to all. Nature kindly contracts the body to meet the limited supply of food, by bringing the system prematurely to ripeness, till some of the adult horses weigh considerably less than the largest sheep. To add weight in muscle and fat, over and above the daily loss by necessary absorption, the keeper of young animals must give them more than barely enough to maintain life; and yet this is the rule of many a farmer in wintering his stock—hogs, cattle, and sheep. What an animal requires according to the weight of its body, to make good the wear and tear of ever-consuming life, in the hourly removal of the elements of bone, tendon, nerve, cellular and vascular tissue, fat, &c., is not known. When an adult animal neither gains nor loses weight, if we subtract from its food all that is voided by the bowels and kidneys, and in respiration, the excess is mostly appropriated to repair the waste in solids, which is constantly in progress. But the effete matter (dissolved solids) pass out of the system mingled with the residuum of food daily eaten, and we have no means of separating the carbon from the brain or muscles, in the carbonic acid that escapes from the lungs, from the carbon in the blood derived directly from food.

Although we cannot say that such a per cent. of aliment goes to repair the bones, such a per cent. to make muscles, or nerves, or fat; yet it is easy to determine by experiments, what kind of food, in what condition, and how much, one should feed to obtain the highest profit. As a general proposition, it may be truly said that about one-third more animals are kept than the food to keep them on will warrant. Life is supported, but *meat* is greatly decreased in quantity and value. The corn that will keep a hog six months without gaining a single pound in flesh, will make 75 lbs. of good pork or bacon if skillfully fed. The same rule applies to all domestic animals. Instead of using the

daily feed of cows to elaborate milk or flesh, the system consumes it all to make the vapor and gases that escape from the wind-pipe, and the excreta from the skin, kidneys, and intestines. In keeping dairy cows, and sheep, we have had occasion to investigate grass, hay, roots, and corn, when eaten by these and other animals.

RURAL HOMES,

OR SKETCHES OF HOUSES SUITED TO AMERICAN COUNTRY LIFE.

THE above is the title of another book on rural subjects by GERVASE WHEELER, the very name of which makes one feel comfortable and invites a hearty perusal of its pages. "RURAL HOMES"! what an association of pleasant thoughts these words call forth—how enchanting to those, who, with a heart full of the real and imaginary charms of the country are doomed to the narrow, noisy limits of a street house in the city. DOWNING'S delightful works on Country Houses and Cottage Architecture, as well as on Landscape Gardening, created a new era in the rural life of this country; perhaps no man can look abroad and witness more satisfactory evidences of the salutary influence of his labors. From one end of this great country to the other, the traveler recognizes, at least, *attempts* at the models he has given, showing conclusively that people have begun to read and think upon the subject of architecture, and whatever concerns the comfort, convenience and beauty of their homes. This is a great point gained, and we may count henceforward upon rapid and steady progress. Many errors will no doubt be committed, until more accurate knowledge is obtained, and taste more cultivated and refined. For the attainment of these ends we must depend mainly upon the circulation of sound writings. The character of Mr. DOWNING'S works is now well known, and it is unnecessary to recommend them to all who wish to read on the subject, to increase their knowledge or refine their taste. The book before us now is one we can also recommend most heartily. We have given it a pretty thorough and careful perusal, and the pleasure and instruction we have derived makes us feel grateful to the author, and bespeak for his book a place in the library of every intelligent person whoever expects to build or improve a suburban, village, or country house.

Mr. WHEELER is an experienced practical architect, and therefore not only treats of style and construction in general, but takes up all the details from the foundation stone to the chimney top, so that nothing is overlooked or forgotten. The subjects of water conveniences, warming and ventilation, so important in dwellings, and so little understood, are brought forward prominently and treated with great detail and simplicity. Excellent advice is given in regard to choosing sites for dwellings, in adapting the style to the surrounding scenery and circumstances, the exterior and interior finish, in the arrangement of fencing and grounds, disposition of outbuildings, and in fact, in whatever concerns the HOME, out-doors or in. The various branches or divisions of the subject are treated of in separate chapters, and we give a synopsis of the first, and would do so of others, did our space permit. Chapter first treats of "*The Excellencies of a House—Choice of a Site.*" Here the author points out the popular errors committed in building, and epitomises the "EXCELLENCIES" of a Home thus:

1. CONVENIENT ARRANGEMENT.
2. FACILITY OF CONSTRUCTION AND REPAIR.
3. PERFECT PROTECTION FROM HEAT AND COLD.
4. ADEQUATE MEANS OF WARMING AND VENTILATING.
5. CONGRUITY WITH THE SCENERY AROUND.

No matter what the style of a house, or what the size, these are the great points, and deserve the prominence Mr. WHEELER has given them. In speaking of the general

arrangement of the grounds, the tenor of the suggestions are unexceptionable, but to the following we must object:

"The fruit and vegetable garden, with a sheltered patch for herbs you place near the kitchen and servant's offices, and are not very anxious they should be in sight, for horticulturise it as you will, a row of bare bean poles is not a very sightly object from a window."

We admit that fruit and kitchen gardens in general are not very *sightly*, but we believe they may, and ought to be so. Suppose, for instance, that the borders are well planted with nice pyramidal and dwarf fruit trees, the walls or fences covered with grapes or trained trees, the interior compartments well cropped with vegetables; and suppose even bean poles, not bare, but covered with beautiful running peas and beans;—such a garden would not be unsightly, but beautiful, the pride of its owner and the admiration of his neighbors. We know of a few such gardens, though but too few, in different sections of our country, and when business calls us in their neighborhood we often travel many miles to visit them. Next month we intend to present a chapter from the book, with illustrations and description of a Suburban Cottage.

WINE MAKING.

BY C. BLAKELY, OF ROXBURY, CONNECTICUT.

I saw in the October number of your paper, a request that some one acquainted with the process of making wine, would communicate information on that subject. To the request of your correspondent, I would add my own, together with some remarks of a practical nature, such as my limited knowledge and experience may suggest, with the hope of ultimately securing the desired result. And here, as it seems to me, we should commence with the *cultivation of the grape.*

For the purpose of making wine, it is of no small importance that a kind of grape be selected that is well adapted to that particular use, otherwise the desired object will be, to say the least, but imperfectly accomplished. It is one thing to extract juice from a sour, ill-flavored grape, but quite another thing to convert such juice into good, well-flavored wine. The grape should also be adapted to the *climate*, and should ripen in season to avoid the autumnal frosts. The red, and white Scuppernong, which are a good wine grape south of 37° north, would entirely fail, for all practical purposes, in more northern latitudes. The Catawba, which has been thoroughly tried, as a wine grape, in the neighborhood of Cincinnati, particularly by Mr. Longworth, and is esteemed by him one of the best wine grapes for that part of the country, besides being an excellent table grape, would probably flourish well from Washington City to Boston. I have this year raised them in great perfection, although some of them were a little injured by early frost. The Isabella, which is probably inferior to the Catawba as a wine grape, will do for still more northern latitudes.

Locality, soil, and due preparation of the ground, are other things to be considered at the commencement of grape culture. Land which has a southern inclination is preferable, and, in northern latitudes, indispensable, for those kinds which ripen late in the season. High ground, which is not too dry, is also preferable to low, marshy land, both for producing a better quality of fruit, and escaping the frosts of spring and fall.

For *propagating* the vine, I consider grafting the better mode to commence with, in case a vine with roots attached cannot be obtained. When a root is to be grafted, it is not necessary that it should be of any considerable length; neither is it necessary that the stump of the vine to which it belonged should be attached to it. Just procure a root from among the wild, native kinds, of any convenient or desirable length, then proceed to divide it into parts, say a yard in length, so that each part shall

have several lateral branches or small fibrous roots attached to it, and then insert in the butt end of each, one or two grafts, precisely in the manner of grafting fruit trees. They should then be carefully placed in the ground where they are to grow, and should receive necessary care and protection. The grafts may be cut at any time from October to March, except in warm latitudes, and may be inserted in April or May following. If they are cut in the autumn, they may be preserved by burying them in the earth, in a cool place, till May or June, but no vegetable matter should be allowed to come in contact with them, or they would be liable to mildew and rot.

When a vine with roots attached is once obtained, it is preferable to propagate by layers. To accomplish this, a vine or branch is selected in the spring, and extended on the earth near by where it is to be imbedded, so that the young shoots will start upward from the earth; and when they have acquired the height of a few inches, the vine or branch to which they belong should be carefully laid in a trench previously prepared for that purpose, and covered over with rich, mellow earth, when it will soon assume the character of a root, and will throw out small roots at short intervals along its entire length, and may, in the autumn following, be cut into almost as many portions as there are vines or branches ascending from it, each of which may be transplanted and become a separate vine.

When it is difficult or impracticable to manage in this way, as is often the case when the vines have been trained to a frame or trellis, so that there are no lateral branches near the earth, a very convenient mode of propagating is by means of boxes. Make a box, say eight inches square, and open at the top; saw out a piece from the top downward, and from two opposite sides, to the depth of a couple of inches; fill with earth, pass the vine through the opening made by the saw, confine it there and cover over with earth. It should be frequently watered through the season, or till roots are well formed, when it may be amputated and removed; thus becoming a separate vine. Several boxes may be thus attached to a single branch of sufficient length, in each of which a separate vine may be obtained. It is objected by some that this method tends rather to dwarf the plant, and to render it of comparatively slow and feeble growth. While the roots are forming and the vine is small, it may be well to prevent its bearing fruit for one or two years, as that will materially assist the growth of the plant. A few years since, Dr. G. B. Smith, of Baltimore, practiced this method in training a single vine, till it had acquired considerable size, when he changed his treatment of it by pinching off the young and tender twigs, instead of the young fruit, as before, thereby retarding the growth of the vine, and the result was a fine crop of grapes. The vine will occasionally need pruning, and with that, as with the fruit tree, it is better to *prevent* redundant growth, by pinching off the buds or young twigs soon after they make their appearance, thus securing the more rapid growth of those parts which are designed for bearing fruit.

The grape vine, unless planted in a rich, deep, calcarious earth, will also repay well the occasional bestowment of a little manure, particularly that possessing alkaline properties. In conclusion, I would say, that with your permission, Messrs. Editors, I propose in a future number of your paper, unless superceded by some other pen, to resume the subject with which this article is headed—that of *making wine.*

We hope our correspondent will give us his system of making wine from the grape. We give the process as pursued by Corneau & Son, near Cincinnati, from the gathering ofthe grape to the bottling of the wine, for which we are indebted to the Western Horticultural Review:

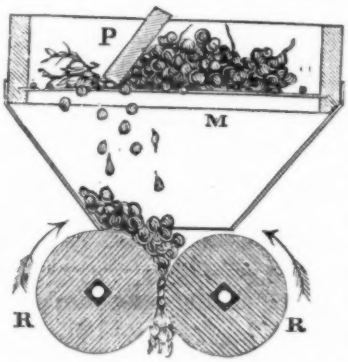
"1. *Gathering.*—The grapes when fully ripe are gathered in baskets containing about a bushel, as well as in a sort of 'pannier' of wood, made very light and strong, and which is supported by straps, or thongs of willow, on the back of the picker; they are brought from the vinyard in this manner and thrown upon the picking tables, where they are carefully assorted.

"2. *Picking.*—This consists in removing by hand, all green, shriveled, or decayed

grapes, which are thrown into tubs or barrels and pressed separately, to make a common wine or vinegar. The finest grapes are carried thence to the stemming apparatus, where they undergo another operation.

"3. *Stemming.*—Besides the improvement in the quality of the wine which this process imparts, there is another material advantage derived from it, which consists in the diminution of the bulk or volume of any given quantity of grapes in bunches. The large press of the Messrs. CORNEAU being capable of containing upward of a hundred bushels after the stems are removed; from which about four hundred gallons of wine may be obtained.

"'Stemming' consists in separating the berries from the stem by means of the apparatus of which a wood cut is appended. The grapes are thrown on the wire sieve M., which is open enough to allow the berries to pass, but retains the stems; a little plank, P., is held in an inclined position, to which a backward and forward movement is given, so as to force the berries through the sieve, and to remove out of the way all the stems as they are stript; with the aid of this apparatus, two men can, in the course of three hours, if regularly supplied with grapes, stem from seventy to eighty bushels. Improvements might be made, by which the manual labor would be diminished; but this simple and cheap apparatus which Mr. CORNEAU has introduced, is generally used by the wine manufacturers of France.

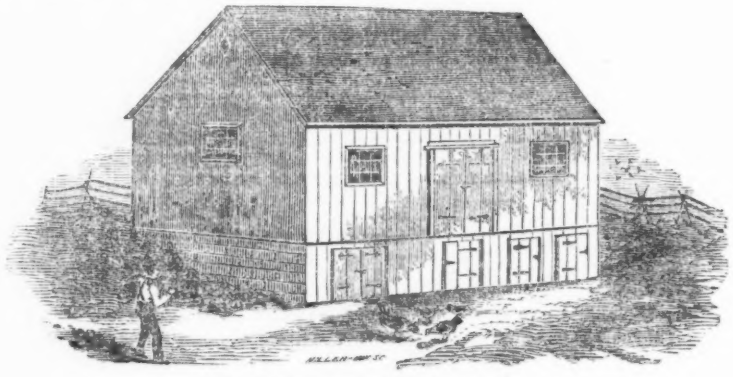


"4. *Mashing.*—After passing through the stemming process the grapes fall into a wooden mill, consisting of two rollers ridged obliquely, to one of which is attached a set of screws by which their distance from each other may be graduated to the proper degree; it being desirable that *every grape* should be crushed but that the seed should not be broken.

"The rollers are turned by hand. The above wood cut exhibits in R, R, a section of these rollers, and that which follows shows two men, one stemming, the other mashing the grapes. From the rollers, the grape (being entirely separated from the stem and thoroughly mashed) passes into the press, where the final operation of separating the juice is performed. The wine passes from the bed of the press, by means of a conductor, into the basement, from whence it is conveyed into casks containing 260 gallons each; these, though by no means of so large a size as those used by some of our wine manufacturers, are of a very convenient capacity for ordinary crops. The first fermentation takes place immediately, and at the end of six or eight weeks the wine becomes perfectly clear—or what is technically termed "*fine.*" A second fermentation takes place in the spring, about the period of the blooming of the grape. The wine should not be bottled until it is *at least* one year old, though it is frequently bottled for immediate use just previous to the second fermentation; this may be done with safety if the bottles can be kept in a very cool place. There are many who think the Catawba wine is better at this period than ever afterward."

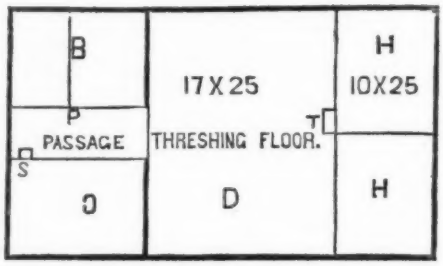
SIDE-HILL BARN.

MESSRS. EDITORS:—I send you a design for a side-hill barn, with an elevation, which, if you think of sufficient merit, you can give to your readers.

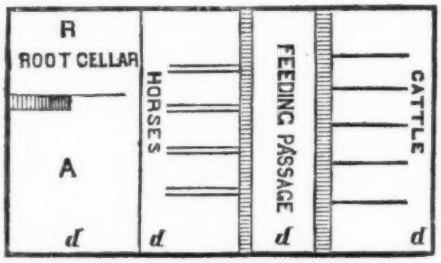


ELEVATION.—SIDE-HILL BARN.

The barn is designed to be built on the side of a hill which will allow of excavation sufficient to form the basement floor, which contains five stalls for horses and six for cattle, with a feeding passage between, into which is thrown the hay and oats through a trap door in the floor above. From this passage the mangers on either side may be filled very handily and with much less trouble and less risk of being kicked, than when a person has to come up behind the animals to get at their heads. A may be used as a carriage or waggon shed, or to store away straw for the use of the cattle or bedding for horses. R is a cellar for roots, &c.



MAIN FLOOR.



BASEMENT FLOOR.

On the main floor, H is a place for hay and oats. T, trap-door communicating with the feeding passage below. D, threshing floor, 17 by 25. C and B, cribs for corn and other grain. P, passage. S, steps leading into the basement.

The cost of this barn would probably be between three and four hundred dollars, and perhaps is as good and convenient as can be built for that sum. At least the plan is worthy of consideration. J. W. G.—*Hillsboro, Ohio.*

PLOWING IN CLOVER.

BY JOSEPH HARRIS, OF ROCHESTER.

In the Patent Office Report for 1850–51 we find the following interesting remarks on the cultivation of wheat:

"Mr. F. D. KINGMAN, of Bergen, Genesee county, N. Y., says that his 'crops of wheat for the last five years have averaged thirty-two and a third bushels per acre.' We commend this fact to the notice of those who have been led to believe that the 'Genesee country' was failing to produce the great staple for which it has long been celebrated. Mr. K. has the following remarks on wheat culture:

"'Time of seeding, from 1st to 16th September; of harvesting, from 20th to the last of July. Brine and lime seed, and sow one bushel and three-fourths per acre; sometimes I sow two bushels, but find it too thick. Plow three times: have this year procured one of NOURSE & MASON'S subsoil plows, and subsoiled a part of each wheat field. It takes three heavy horses to haul the surface plow seven inches deep, which is my gauge. Subsoil with a yoke of oxen and a pair of horses, driving the plow six inches below the cut of the surface plow. The increase is from eight to ten bushels per acre. Within the last ten years, I have not been troubled with the Hessian fly but once. Price of wheat, from $1 to $1.12. At least one-third of my wheat is sown after spring crops, and clover always follows, being sown in April, at the rate of ten pounds of seed per acre with one hundred of plaster. I turn nothing into clover fields in the spring; and when it is half in blossom, turn under with the plow. I now raise too much straw, and feel the need of understanding chemistry to learn what to apply to increase the berry. We once had a chemist at Rochester (Dr. LEE) who would give the desired information, but I did not then know that it was needed by me.'"

It would appear folly to condemn any system of culture or rotation that yields on an average of five years thirty-two or thirty-three bushels of wheat per acre, and we have no desire to do so; yet the fact that too much straw is produced from plowing in clover is a significant and interesting corroboration of scientific experiment, and deserves some notice.

It has been shown by Mr. LAWES' experiments, that when wheat is supplied with ammonia, (nitrogen and hydrogen,) it obtains sufficient carbon from the carbonic acid of the atmosphere; and that when carbon was supplied, either as farm-yard dung, rape cake, or ground rice, the crop was increased only to that extent which the ammonia they contained would alone have benefited it. Thus: two hundred pounds of sulphate of ammonia, containing forty pounds of nitrogen *and no carbon*, had as great a beneficial effect as eight hundred pounds of rape cake, containing the same amount of nitrogen and some *six hundred pounds of carbon besides*. The same effect was produced with the ground rice and farm manure—no benefit being derived from the carbon. It was also found that as large a crop could not be raised with rape cake as with ammoniacal salts; for when rape cake was supplied in sufficient quantity for its nitrogen to be equal to that supplied in the ammoniacal salt, the straw was so unnaturally developed that the crop was laid and an inferior quality and less quantity of grain produced. That this effect was caused by the superabundance of carbon in the soil, few, we think, will question. The uniformity of the results through a series of experiments for several years leaves no doubt on our own mind, and had we space the point might be illustrated from numerous facts of which every farmer is cognizant.

A ton of dry clover hay would contain about 40 lbs. nitrogen, 960 oxygen, 740 carbon, and 80 hydrogen. It will be seen that when this is plowed in for a few years, that oxygen and carbon would accumulate in the soil to an injurious amount, and "too much straw" would be raised, especially on soils in which there was not an abundance of lime and saline substances. Now, nitrogen being the only element of value that is gained by the growth and plowing in of clover, and carbon and oxygen being injurious, it is an interesting inquiry—How can we get rid of these substances and retain the nitrogen? Nature has furnished the means, and fortunately science has discovered them. When food is consumed by animals, the carbon and hydrogen it contains is burnt in the lungs to suppiy animal heat, while the nitrogen and greater part of the earthy matter is

voided in the liquid and solid excrements, which may be returned to the soil, where, providing there has been no loss, they will be more beneficial than had the food itself been plowed in. This method also affords an opportunity of enriching the nutritive qualities of the food and greatly increasing the value of the manure by giving to the animals, with the clover, rich nitrogenous foods, such as oil-cake, peas, beans, &c. But this is "high farming," and requires more capital than most farmers are willing to invest on their farms. To these generally, any caution about growing "too much straw" is unnecessary: plowing in clover is the best thing they can afford to do; and in a few years, when by this means their straw grows too rank, they will have spare capital to invest in more stock and artificial foods.

Wm. B. Le Couteulx, of Black Rock, has furnished us with the following translation from the French, which we publish with pleasure, and has kindly promised us further favors:

Report made to the Central Agricultural Society of Paris, upon the different Maladies existing in Wheat in France, particularly a new Malady which appeared for the first time in 1851.

Besides the accidents from vegetation, to which the wheat is subject, and which in the markets according to these different accidents, causes it to be called, *scalded, shrunk, melted or laid down wheat* &c., there are three maladies which are peculiar to it.

Reached by the first, the wheat is deformed and of bad aspect; it is almost always deprived of the re-productive germ, and very often of that substance necessary to make bread. It is called Rickety —in French *Rachitique.*

In the second, the grain, its envelope, and the ear, altogether, transform themselves into a black and dry dust, which the winds or rains carry away. It is called Coal—in French, *Charbon.*

In the third, the appearance of the wheat is altogether different, the ear keeping its exterior shape until harvest; but the least pressure with the fingers will be sufficient to crush it, and a fat, black, dusty substance, of an infectious smell, will come out of it. It is called Rot—in French, *Carie.*

The new malady which has appeared this year, (1851,) has no analogy with those above enumerated. Instead of being in the head of the plant, otherwise the ear, it is in the low part of it. This is what caused it, from its first appearance, to be called the Malady of the foot—in French, *Maladie du Pied.*

That malady has its seat close to the ground, or between the roots and the first joint of the stalk. It consists of a mouldiness which, at first sight, one would think came from being burnt. In some cases, the mouldiness covers the whole stalk, when in some others only a part of it. The part so affected dries up, dissolution commences, and it soon loses that necessary strength to bear the weight of the plant, which bends and then drops on the ground as if beaten by storm, where it would rot, was not the hand of the farmer ready to gather it.

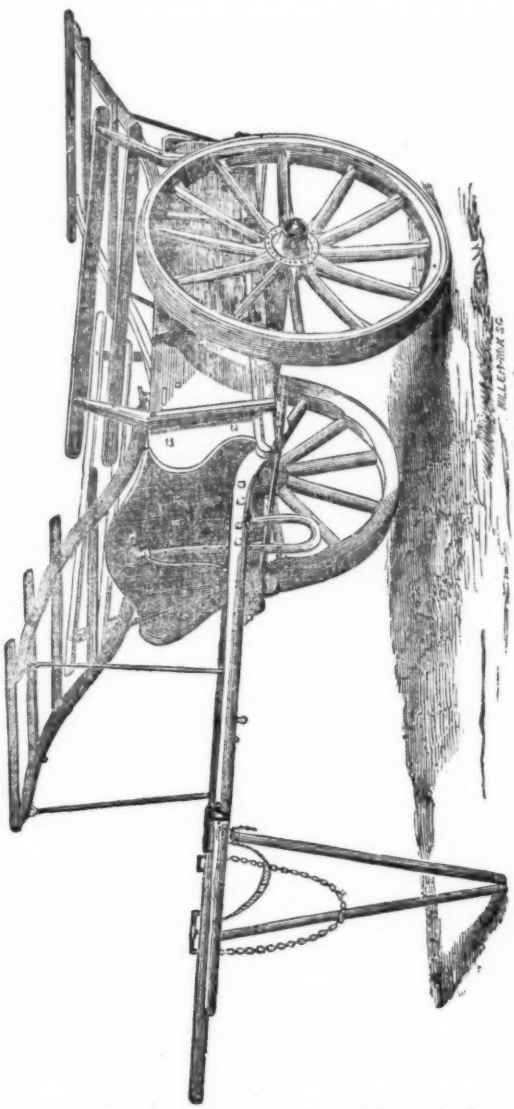
In some parts, said malady showed itself just as the wheat was beginning to bloom; in some others before, and in many others, after. In the first instance, the harvest is entirely lost; in the second, the ear already formed still progresses, but not without some difficulty, remaining short and the grain small, giving only half a crop. If an incision be made in the mouldy place with a pen-knife, it will be seen in the interior that the cellular tissue has lost all its elasticity—that it is no more impregnated with sap, as when in a healthy state, the fibres being stiff, dried up, breaking, and offering all the symptoms of a dead plant. If examined with the magnifying glass, it will be seen that all those white and porous filaments are nothing else than mushrooms, which, although but just rising, have had sufficient strength to stop the ascendant march of the sap and bring death to the plant.

This malady appeared most particularly in the country around Paris—in La Brie and La Beauce, in the valley of Isere, in the departments of the Rhone, Aisne, Somme, Oise, Meuse, Ardennes, and many other parts of France, from which authentic reports are not yet received.

AGRICULTURAL IMPLEMENTS AT THE GREAT EXHIBITION.

BY P. BARRY, FROM NOTES TAKEN AT THE WORLD'S FAIR.

I have never seen a cart at any of our American Agricultural Fairs. There is no lack of plows, harrows, wagons, cultivators, straw cutters, &c., but no implement-maker in America, that I am aware of, has taken it into his head to make and exhibit a nice farm cart. May I take this occasion to call upon them to do so. Will not our implement dealers in Rochester suggest to their ingenious manufacturers to try their hand on carts. They will "take,"—there is no question about this. We use three in our



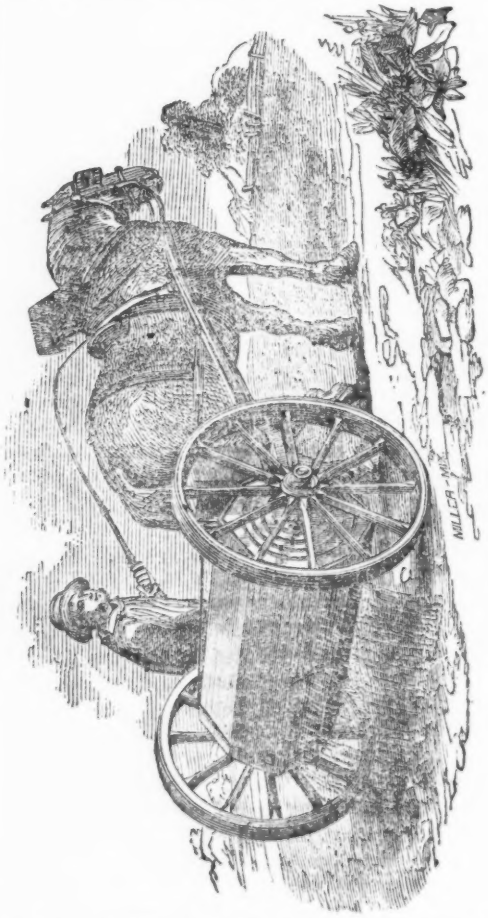
ONE HORSE FARM TILT CART. Fig. 1.

nurseries now, but they are very indifferent articles. It is hard to find a man who can make a cart "that is a cart" for the farm. I do not mean an *ox cart*—one of the most hideous pieces of mechanism that ever rolled on wheels. The moment one enters the English department of implements, he may jump at the conclusion that the cart is an implement of first importance in British husbandry. Not an exhibitor of implements but has brought along his cart as certainly as his plow. And what a variety!—the Farm Tilt Cart, the Harvest Cart skeleton, the Liquid Manure cart, the Spring Cart for fat stock, and many others. Two of these at least seem to be well worthy the attention of agriculturists in every country, and I have not the least doubt will soon be generally in use,—I mean the *One Horse Farm Tilt Cart* and the *Liquid Manure Cart.*

The annexed drawing, fig. 1, is a good model, construction simple and convenient. The body sits flat on the axle, and the shafts are attached to the bottom of the body by bent iron plates; this brings the cart level when at work and obviates the necessity of bent shafts. The tipping apparatus is also novel: an iron bar eighteen inches to two feet long, attached to the front of the body, pierced with holes two or three inches apart, through which an iron rod goes, connecting the body and shafts. By this arrangement the body can be kept at any desired angle in unloading—very convenient in distributing manure or compost in small heaps. The shelving or ladders shown in the cut can be removed at pleasure, and are only intended for carrying loads of grain, hay, &c. The cost of this cart in England is about $50.

"*Busby's Prize*" *Cart*, which is one of the best I have seen, has a body five feet six inches long and four feet wide. Wheels four feet six inches high and four inches wide. The felloes two inches thick inside and one and a quarter inches outside. The body sits close to the axle, and is just as low as it can be to tilt. The shafts are attached to the body by the bar pivot on which the body turns. It has a shelving, or rack, composed of light boards on spreading knees or brackets; two on each side and end. On these brackets there are iron hooks that catch on the box inside and hold it firm. The price of these carts in England is $50 for two and a half inch wheels, and $55 for four inch wheels. All wheels for the land ought to be four inches wide, as they do not sink like narrow ones. *Wide* tires and felloes need not be so thick as narrow ones.

A Mr. ROBERTSON, from Scotland, exhibits a very neat one-horse cart with a *sliding axle*, by which the weight on the horse's back is regulated in going up or down hill. The axle is moved back or forward by the screw behind.—Several carts are exhibited so low that the shafts require to be bent to bring the body level; in other cases the shafts are straight, but attached, as in the foregoing cut, by bent iron stays that effect the same object as the bent shafts. We find by experience that *lightness* in the cart, as in all other implements, is a valuable property, and therefore the best quality of timber should be used in their construction.—Broad wheels, low bodies, simple and convenient tilting apparatus, and a nice adjustment of the *center of gravity*, are the points of importance.



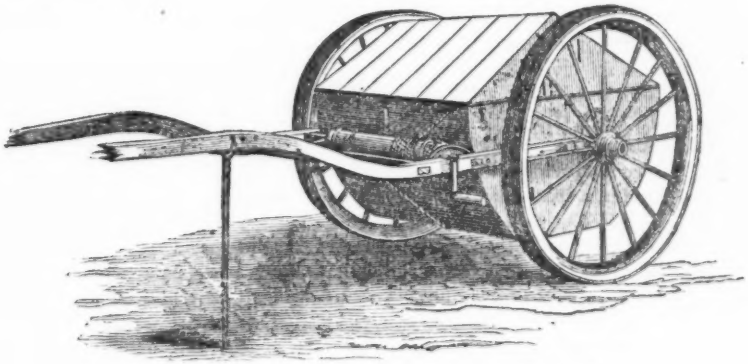
LIQUID MANURE CART. Fig. 2.

The application of manures in a liquid state is now practised by the best English and Scotch agriculturists, and carts for the purpose attract considerable attention. Fig. 2 represents one called the *Cylinder Cart*, which appears to be an excellent contrivance. It consists of a wooden or iron barrel revolving upon its axle. One side of the barrel consists of a perforated board, which is kept uppermost when not at work, and to set it to work it is only necessary to turn the barrel round. Thus valves and delivery pipes are altogether unnecessary; and however hilly the land, or however empty the barrel may be, it will always adjust itself by its own weight, and deliver its contents at a uniform rate. As a natural consequence of

this greater simplicity of construction, the price is considerably lower than that of any liquid manure cart hitherto exhibited. The cart shown in the sketch, (fig. 2,) containing 100 gallons, weighs only 5½ cwts. It may be made of any required width, and the delivery apparatus, which is simply a perforated board, can be varied at little cost to suit every description of drilled crop, and also to manure grass lands, &c., broad-cast. It has also been advantageously used in gardens and pleasure grounds, for watering lawns and flower beds. There is a cock from which water or liquid manure may be drawn off into watering pots, or a flexible pipe or hose may be screwed into this cock, or by fixing a small force pump into the air hole of the cart, the water can be forced to any desired height.

The *Tumbler Cart* is another useful article. It is chiefly intended to carry off the sweepings of streets, nightsoil, &c. The design represented in the cut is highly approved and in very general use already in English towns. The body of the cart consists of a wrought iron tank, which is fitted with a delivery pipe and valve that can be affixed or removed in a very few minutes; so that in towns it answers the purpose of a watering cart for the streets, while for agricultural purposes the cart can at any time be adapted to the delivery of liquid manure, either from a pipe, or in the form of a sheet over the back edge of the cart.

The chief peculiarity of this cart consists in its extreme lowness, obtained by passing the axle through the body of the tank, while at the same time the convenience of completely tipping the cart is attained in the larger sizes by the introduction of an eccentric which allows the body to tip, and in fact entirely to revolve on the axle without touching the ground.



TUMBLER CART IN A POSITION FOR TRAVELING.

The great advantage of the low body for filling, not only with fluid or semi-fluid substances, but with earth, gravel, lime, or any other material, for the hauling of all which it is exceedingly well adapted, must be too obvious to require comment. For the purpose of filling, the body can be canted to any required inclination, so that the labor becomes less than that of filling a wheelbarrow, thus effecting an immense saving in the cost of carting every description of earth and minerals. The complete method of discharging the load by entirely tipping the cart, also gives it an advantage for many purposes over every other kind of cart.

I would recommend this cart to all who collect street sweepings, nightsoil, &c. To the scavengers of large cities it would be particularly valuable. In Rochester they use boxes placed on carts, from which the filth is not unfrequently sprinkled over the streets, and I have seen contrivances quite as bad in the city of New York.

Horticultural Department.

CONDUCTED BY P. BARRY.

DWARF FRUIT TREES.

A FEW years ago there was scarcely anything known about dwarf fruit trees in this country, but of late they have attracted considerable attention and their character has become somewhat understood; but there are a multitude of persons who have very faint and incorrect ideas on the subject, and therefore, although it may appear to the better informed class of cultivators a very superfluous undertaking at this time of the day, we are compelled to offer a somewhat minute explanation in justice to many whose claims we are bound to regard.

A Dwarf Tree, then, is a tree which by a certain mode of propagation and culture is reduced far below the natural dimensions; for instance, an apple, which if budded or grafted on a common apple stock will make a tree twenty, thirty, or forty feet high, and as much in diameter, covering perhaps two or three hundred square feet of ground, will, if budded or grafted on a *Paradise* stock, (which is a dwarf *species* of the apple, attaining only three or four feet in height,) never exceed four or five feet in height and as much in diameter, occupying little more ground than a gooseberry bush. A Dwarf Pear, is a pear tree formed by budding on a quince, or some other small species of the pear family. Thus, a pear which if budded or grafted on a common pear seedling, will attain thirty or forty feet in height with a corresponding diameter, when budded or grafted on a quince or a thorn will not exceed twelve or fifteen feet, and may even be reduced to three or four feet by working on a *mesphilus*, a *cotoneaster*, or some very small growing species of the pear family, or "alliance." So it is with other fruits, and the grand objects of dwarfing are—

First—To obtain SMALL TREES, adapted to small gardens, enabling the proprietors to enjoy a greater VARIETY than they could otherwise.

Second—To obtain trees that will correspond in APPEARANCE with the enclosure in which they are planted.

Third—To obtain trees that will BEAR EARLY, for dwarfing begets precociousness; and,

Fourth—To obtain trees that are LOW, EASY OF ACCESS in all parts, easily PROTECTED where protection is necessary, and not exposed to winds that would be likely to blow off the fruit or otherwise injure them.

These are the ordinary objects in view in dwarfing trees. But many suppose that a dwarf tree must, as a matter of course, produce dwarf, or proportionably small fruit. This is a great error, but one which the inexperienced very naturally fall into. Dwarf trees, instead of producing small fruits, or those below the natural size of the variety, very often produce them larger. In another place we have given an account of a wondrous large apple grown upon a dwarf tree. This specimen was at least one-third larger than the average product of standard trees. We have had the past season *Red Astracans* on a three year old dwarf tree about two feet high, nearly twice the usual size on standard trees, and a little standard four year old tree of *Canada Reinette* that produced four extraordinary specimens, the largest one measuring over fourteen inches in circumference. Nothing in all our grounds in the way of fruits, excited so much wonder as this, from the last of August until the 1st of November. The small size of the tree and the prodigious size of the fruit induced many to doubt the reality, supposing that some trick had been played, similar to the fastening of a gourd on an apple tree. As a general thing where a variety does succeed on the *Paradise*, the fruit will be larger than

on the free or common stock. So it is with pears—the largest specimens of *Bartlett*, *Louise Bonne de Jersey*, *Duchesse d'Angouleme*, or *White Doyenne*, we have ever seen, were grown upon *dwarf* trees. The idea, therefore, that a dwarf tree must produce small fruit is just the reverse of the fact. At another time we may offer some remarks on the cause of this.

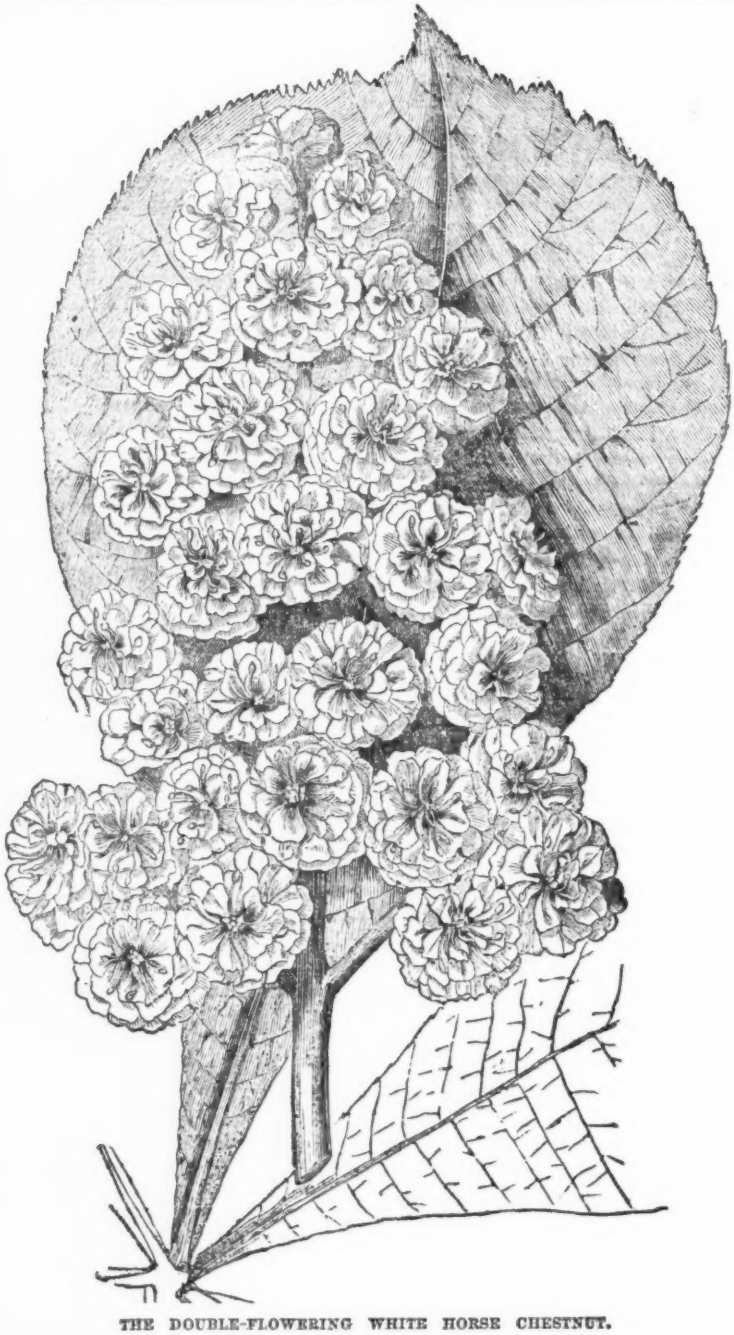
Some imagine that to propagate Dwarf Trees it is necessary to take the scions from dwarfs. We have heard this notion advanced often, and in one case by a young nurseryman. There is not, perhaps one person in ten thousand, however, but knows better than this. Dwarfing is the result of budding or grafting on a particular stock, as we have already said, and it matters not whether we take our buds or scions from a dwarf or a standard tree, from one three feet or thirty feet high, the result will be the same, if the scions are in both cases equally healthy. We can also take buds or scions from dwarf trees and work them on common or free stocks, to produce standards.

In regard to stocks there is one point on which even many intelligent cultivators are not well informed, and that is the necessity of the stock and scion being of the same natural genera, or alliance at least. Thus, the botanical order *Pomaceæ*, or *Appleworts*, as LINDLEY renders it, in the Vegetable Kingdom, embraces the apple, (*pyrus malus;*) the Pear, (*pyrus communis;*) the Siberian Crab, (*pyrus baccata;*) the Quince, (*Cydonia;*) the Medlar, (*Mespilus;*) the Mountain Ash, (*pyrus aucuparia;*) the Thorns, (*cratægus;*) the *Amelanchiers*, of which our native Shadblow is one; the *Photinia*, the *Cotoneaster*, &c. These have all strongly marked natural affinities, and may with more or less success be budded or grafted upon each other. But the more nearly they are related—that is, the greater the congeniality in their natures, the more successful will be the union: thus, the pear will grow upon the apple, but much better upon either the quince, thorn, or mountain ash. But, if we should attempt to graft one of the species belonging to this order of appleworts, (*pomaceæ*,) upon another belonging to the order *drupacae* or "almondworts," [*Veg. King.*] we would be utterly unsuccessful, for these two have strongly marked botanical differences, and little or no congeniality of nature. We can never, therefore, graft apples, pears, or quinces, upon cherries, plums, or peaches.

The order *Drupaceæ* or Almondwort, alluded to, embraces all the species of plum, cherry, peach, apricot and almond. These have all certain prominent botanical similarities and affinities, and may all be worked upon each other with success proportionate to the strength of the affinity: hence, the peach, apricot, almond, and plum, in general grow upon one another perfectly well, but none of them can be worked to any practical advantage upon the cherry. The genus *cerasus*, (the cherry,) contains many species, differing greatly in appearance; for instance, the *Mahaleb* and *Mazzard* are as distinct in general appearance of foliage and habit as an oak and a willow, yet they grow well one upon the other, because of a congenial nature.

We cannot at this time follow up these points further, but we have drawn attention to them, and will add that every one who aims at being an intelligent cultivator should not fail to give it attentive consideration.

Many people who have never seen dwarf trees, but order them from nurseries are quite disappointed when they see them. A tree two, three, or four feet high seems *small* to those who have all their lives been accustomed to large trees. They fear "they will never come to anything." We have seen people in search of dwarf trees, and yet ask the *tallest* tree in a row. Dwarf apples are of course very small when transplanted. A yearling will be from one to two feet, and at two years very little taller, but branched. Such diminutive things to the inexperienced are *too small*. One man says "the dwarf apples are sprouts—not what I imagined them at all." There is a much greater lack of knowledge on this subject than there ought to be, when books and papers that contain the remedy are so abundant and cheap. Young cultivators, think of these things during the approaching stormy weather and long evenings of winter.



THE DOUBLE-FLOWERING WHITE HORSE CHESTNUT.

THE DOUBLE-FLOWERING WHITE HORSE CHESTNUT.—We copy the accompanying figure and description of this rare and beautiful variety of one of the most popular ornamental trees from the Gardener's Magazine. We had the pleasure of seeing some fine specimens of it abroad; the largest was in Mr. LE ROY's nurseries at Angers, France: it is some fifteen years old, and about as large as the common sort at that age in this country. It is easily propagated by grafting or budding on the common one, and will no donbt soon be had in our nurseries.

"ÆSCULUS HIPPOCASTANUM FLOREPLENO. Double flowered Horse Chestnut.—A rather uncommon and very ornamental tree, equalling in vigor the common sort, from which it differs only in its double flowers. These are very showy, having a strong resemblance to a good double hyacinth; they are pale blush, with deeper blush at the base of the petals. Our figure was made from a specimen communicated by Mr. RIVERS, nurseryman of Sawbridgeworth, who informs us that he 'received it from the Continent some seven or eight years since.' The spike of flowers we have represented was not as long as usual, owing to the tip having been killed by the frost in May. The trees flower when quite young."

LARGE APPLES.—In our part of the country, large apples are by no means a novelty. Our *Twenty Ounces*, *Monstrous Pippins*, and *Pumpkin* apples, are so common that nothing short of the *wonderful* is really worthy of note. We think we have something before us that comes under that head; if not, it borders closely upon it at any rate. A specimen of the *Fall Pippin* we think, produced in the garden of AARON ERICKSON, Esq., of Rochester, measuring sixteen inches in circumference, and weighing twenty-six and one-half ounces. We cut this prodigious specimen and found it sound and good to the core, and of very fair quality. There grew on the same tree, another weighing twenty-five ounces, and two others nearly as large. It is a serious, if not a very dangerous matter to grow such apples. Suppose one of these should fall ten or fifteen feet, upon the head of a child, or even of a grown person? But Mr. ERICKSON does not apprehend any danger of this kind. The tree that produced these monsters is not over three feet high, and this will appear to those not accustomed to the culture of dwarf trees, no less remarkable than the size of the apples. We think Mr. E. may say that he has produced the largest apple on record, on the smallest tree. In all our experience, we have seen none, nor in reading have we seen any account of such large apples. The trees are some seven years planted, and are about ten years old. Mr. ERICKSON has also produced the largest and most beautiful specimens of the *Alexander* apple that we have ever seen, on dwarf trees, too. The crop on all his dwarf apple trees, the past season, has been remarkably fine, although on standard trees generally, it has been below the usual average. The dwarf pears, in the same garden, were, a few years ago, the finest in this country of their age, but the blight that prevailed here a few years past, made sad inroads upon them.

DESCRIPTIONS OF NEW PEARS.

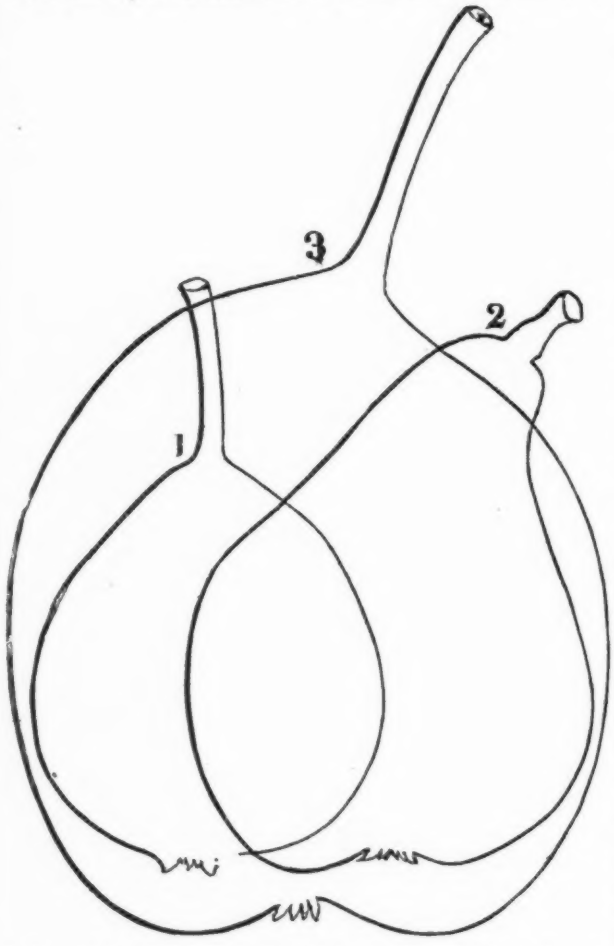
BY B. DESPORTEZ, OF ANGERS, FRANCE.

The Alouette pear, (Fig. 1.)—Mr. ANDRE LE ROY found this variety in one of his nurseries on the farm at Sauge, near Angers. The tree has a pyramidal habit, of vigorous growth, and as a standard exceedingly productive—one of the most profitable for market. The farmer gathers annually 4000 fruits from this tree, weighing 400 lbs., or thereabout, and sells them for six or eight dollars, which, considering how cheap everything is in our country, is considered large profits, and few other kinds yield so much.

The fruit is small—about two inches long and one and three quarters in diameter. *Form*—turbinate, regular, surface uneven. *Stalk*—slender, one inch long, inserted on the surface. *Calyx*—large, broad, deep. *Color*, greenish yellow, sprinkled with gray dots and rosy spots on the sunny side. *Flesh*—breaking, white, juicy, sweet, and agreeably perfumed. Ripens beginning of September here. The hardiness and productive-

ness of this variety make it very valuable as a standard orchard sort for the market. The fruit resembles very much the *Ah mon Dieu!* or *Abondance*, but ripens earlier.

The Barboucinet pear, (Fig. 2.)—This variety was discovered by Mr. ANDRE LE ROY at his nursery of Barboucinet on the farm of the same name. The tree is about 25 years old and 20 feet high, of medium vigor, branches slender and spreading—adapted to the standard form. The fruit is about three inches long and two inches in diameter, pyriform, irregular, surface uneven. *Stalk*—one-fourth of an inch long, stout, enlarged at both ends, fleshy at the base. *Calyx*—open, shallow, in a broad cavity. *Color*—green; when ripe, reddish spotted on the sunny side and gray or russeted every where, and especially around the stem; dotted over the surface with deep green points. *Flesh*—greenish white, tender, melting, buttery, and juicy, with a slight acidity. Ripens here beginning of Sept.



This is a first rate pear and very profitable for market. It is highly esteemed by the farmers, who prefer it to larger sorts. This season the tree has yielded about 600 fruits weighing 120 pounds, which makes a good profit even here where the great abundance of fruits make them very cheap.

The Bezy des Veterans pear, (Fig. 3.)—This is a very large fruit, nearly round, gengenerally depressed on one side, near the stem. *Skin*—thick, gray, shaded with light yellow. *Flesh*—white, fine grained, firm, breaking, rather deficient in juice but sugary and greeable. It possesses the rare merit of keeping well till April and May. The tree is vigorous, well adapted to the pyramidal form, and is very productive.

We regret that M. DESPORTEZ has not given us a more full account of this variety. We have a few fine specimens on hand, and from appearances we are inclined to believe it will prove a valuable winter variety.

Ladies' Department.

VILMORIN'S FLOWER GARDEN AT PARIS.

THE following letter from Mr. BARRY, while in Europe, will be interesting, as showing the extent to which the raising of flower seed is carried in France, and the care taken to preserve all varieties in purity and perfection. We shall receive from this establishment a large collection of seeds, (probably some time in January,) and will distribute them among our female readers. So, fair lovers of flowers, send on your orders and we will furnish you a collection of flower seeds, without charge, so fine that all who pass by in summer may know where the Genesee Farmer is taken, by the beauty of the garden. We shall not be able to supply seed until February, but all applications are placed on file and will be attended to.

Among the many interesting gardens I have visited in and around Paris, none have pleased me more than the great flower garden of VILMORIN. It contains, I should think, between two and three acres, and is wholly, or *almost* wholly, devoted to the culture of annual flowers *for the seeds*. It is not laid out artistically like a flower garden, for it is in fact a flower *nursery*, laid out in rectangular beds four feet wide, with paths two feet wide between. At the entrance gate there is a well of enormous depth, (I forget the number of feet,) from which water is drawn, by a horse, into a great cistern, and thence conveyed by pipes into the various quarters of the garden and deposited in tanks, from which it can be applied liberally with very little labor. In very warm, dry weather, such as they frequently experience here in the months of July and August, the horse pumps, the water runs, and the men pour it on, *all day*. There can be no such thing as a *drouth* where this arrangement exists. I have already, in speaking of market gardens, alluded to the Paris system of watering and its effects. I have seen a great many nurseries; I think I can say I have seen the largest and the smallest, the worst and the best that exist, but I must decidedly call this flower nursery *the most beautiful*. I am just in time to see it—the finest things are in full bloom.

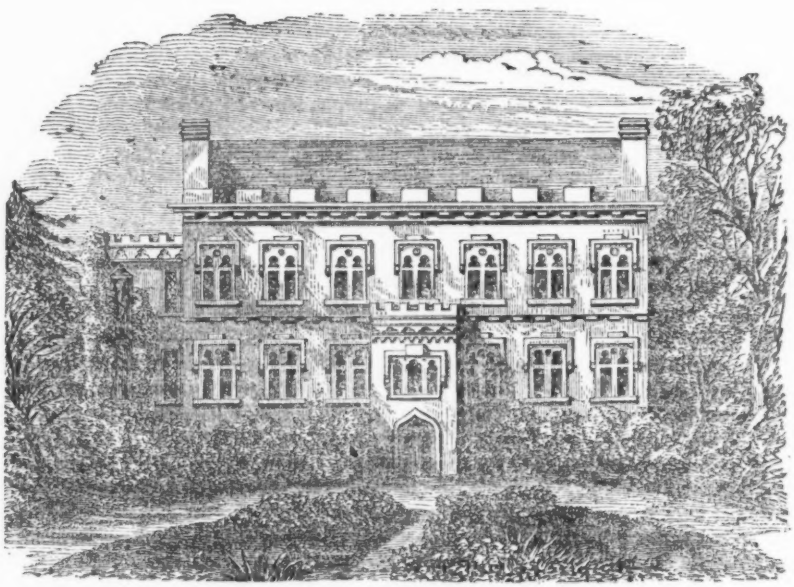
What a gorgeous display of *Dwarf Rocket Larkspur*, immense beds of it, every color, and every shade of color, by itself, red, white, purple, blue of various shades, and some beautifully striped like a carnation. They are indeed the glory of the garden. (I must say here, for the benefit of the more inexperienced, that this is not an annual, but a biennial flower, the seeds being sown one year and flowering the next.) Next in importance, in point of show just now, stand the *German Ten Week Stocks*. Like the *Rockets*, they are grown in great quantitities, and every color and every shade is kept by itself with the greatest care and precision. Those who never see but the product of a paper of mixed Ten Week Stocks, can have no idea of the display that can be made with this flower. Here are dark purple, of a velvety richness; there are fiery scarlet; next we come to delicate lilacs, then flesh color, pure white, &c., &c., through all the richest, deepest, darkest, and most delicate tints. The seeds of all these colors of Rockets and Ten Week Stocks are carefully saved and put up separately. The *Balsamines* and *Asters* are prominent objects, but I am too early for them. Among the most striking species, I have noticed *Godetia rubicunda*, rosy purple, and *Godetia Lindleyana*, lilac with red spots. These are both fine, showy things. *Kalffussia Amelloides* has flowers of a rich, deep blue. The *Yellow Centaurea* is showy and fine. *Lobelia ramosus* and *erinus* are two slender dwarf growing plants that make charming masses. The *White Viscaria* is grown largely and makes fine masses. *Leptosiphon* (Gilia) *Androsacea* and *Densiflora*, are fine for the same purpose. I see an *Escholtzia*, nearly white; a very large, double, purple, *Gnaphalium* (everlasting flower); a beautiful yellow *Platystemon* from California; great beds of *Alstromerias* and *Mesembry anthemums*. The tri-colored

variety of the latter is a great acquisition. The *Candytufts* are quite remarkable, especially the white rockets and deep purple. No grower of annuals should be without these. The *Convolvulus*, or Morning Glory, makes a fine show; the tricolor, or striped one, is very pretty. An *Argemone*, with prickly leaves, and large, showy, yellow blossoms, appears well. I might go on and cover pages with names.

It is not only in the rarity and variety of the flowers here that its greatest beauty consists, but in the wonderful luxuriance in which everything is growing. There are natives of many widely separated countries, and different climates, yet all are flourishing. This garden is but a small portion of the grounds of Messrs. VILMORIN & Co., devoted to Horticulture; they have several other gardens appropriated to other objects, but, just at this time, this is the most interesting.

Under the title of "*Vilmorin Albums*," this house publishes every year two great folio plates, lithographed and colored, one representing culinary vegetables of the natural size, and the other new and interesting flowers artistically grouped in a boquet. We had the pleasure of examining these Albums. They are kept in the office for the benefit of purchasers of new and rare articles. The seed catalogue of this establishment is prepared in the most skilful manner; and, besides, they issue a small, cheap work, which gives simple directions for the sowing of flower seeds and cultivation of them in the open air.

The house of Messrs. VILMORIN, ANDRIEUX & Co., is well known over all Europe, as well as in America. There is not, probably, in existence a more complete or better managed establishment of the kind. The proprietors are not mere merchants who know how to buy and sell, but they are profound botanists and skilful horticulturists, familiar with the flora of all explored countries and with the particular culture required by different species and tribes. M. LOUIS VILMORIN is at this moment one of the most efficient promoters of horticultural improvement in France. P. B.—*Paris, July*, 1851.



OTSEGO HALL.

RESIDENCE OF THE LATE J. FENNIMORE COOPER, COOPERSTOWN, N. Y. DRAWN BY MISS COOPER, AUTHOR OF "RURAL HOMES."

Youths' Department.

CENTER OF GRAVITY.

The following article on the *Center of Gravity* we take from an excellent paper in the Transactions of the New York State Agricultural Society, on *Agricultural Dynamics*, by J. J. Thomas. It will prove both interesting and instructive to our youthful readers.

The *center of gravity* is that point in every hard substance or body, on every side of which the different parts exactly balance each other. If the body be a globe or round ball, the center of gravity will be exactly at the center of the globe; if it be a rod of equal size, it will be at the middle of the rod. If a stone or any other substance rest on a point directly under the center of gravity, it will remain balanced on this point; but if the point be not under the center of gravity, the stone will fall towards the heaviest side.

Every farmer who erects a wall or building; every teamster who drives a heavy load, or even he who only carries a heavy weight upon his shoulder, may learn something useful by understanding the laws of gravity.

If any body, of whatever shape, be suspended by a hook or loop at its top, it will necessarily hang so that the center of gravity shall be directly under the hook. In this way, this point in any substance, no matter how irregular its shape may be, is ascertained. Suppose, for instance, we have the irregular plate or board shown in the annexed figure, (fig. 1,) first hang it by the hook *a*, and the center of gravity will be somewhere in the dotted line *a b*. Then hang it by the hook *c*, and it will be somewhere in the line *c d*. Now the point *c*, where they cross each other, is the only point in both, consequently this is the center sought. If the mass or body, instead of being flat like a board, be shapeless like a stone or lump of chalk, holes bored from different suspending points directly downwards, will all cross each other exactly at the center of gravity.

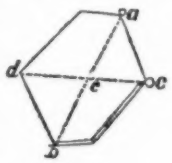


Fig. 1.

An imaginary line from the center of gravity perpendicularly downwards, to where the body rests, is called the *line of direction*.

Now, in any solid body whatever, whether it be a wall, a stack of grain, or a loaded wagon, the line of direction must fall within the base or part resting upon the ground, or it will immediately be thrown over by its own weight. A heavily and evenly loaded wagon on a level road will be perfectly safe, because the line of direction falls equally between the wheels, as shown in fig. 2, by the dotted line, *c* being the center. But if it pass a steep side-hill road, throwing the line of direction outside the wheels, as in fig. 3, it must be instantly overturned. If, however, instead of the high load represented in the figure, it be some very heavy material, as brick or sand, so as not to be higher than the dark part of the figure, the center of gravity will be much lower down, or at *b*, and thus the line falling within the wheels, the load will be safe from danger, unless the upper wheel pass over a stone, or the lower wheel sink into a rut. The center of gravity of a large load may be nearly ascertained by measuring with a rod; and it may sometimes happen that by measuring the sideling slope of a road, all of which may be done in a few minutes, a teamster may save himself from a comfortless upsetting and perhaps heavy loss. Again, a load may be temporarily placed so much towards one side, while passing a sideling road, as to throw the line of direction considerably more up hill than usual,

Fig. 2.

Fig. 3.

and save the load, which may be adjusted again as soon as the dangerous point is passed. This principle also shows the reason why it is safer to place only light bundles of merchandize on the top of a stage coach, while all heavier articles are down near the wheels. When it becomes necessary to build very large loads of hay, straw, wool, or other light substances, the "reach," or the long connecting bar of the wagon, must be made longer, so as to increase the length of the load. For, by doubling the length, two tons may be piled upon the wagon with as much security from oversetting as one ton on a short wagon.

Fig. 4.

Fig. 5.

Where, however, a high load cannot be avoided, great care must be taken to have it evenly placed. If, for instance, the load of hay represented by fig. 4, be skillfully built, the line of direction will fall equally distant within each wheel. But a slight misplacement, as in fig. 5, will so alter this line as to render it dangerous to drive except on a very even road.

It is familiar to every one, that a body resting upon a broad base is more difficult to overset than when the base is narrow. For instance, the square block, fig. 6, and pyramid, fig. 7, are less easily thrown over, than the tall and narrow block of equal weight, fig. 8. Because, in turning the square block over its lower edge, the center of gravity must be lifted up considerably, in the curve shown by the dotted line; but with the tall narrow block, this curve being almost on a level, very little lifting is required.

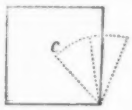


Fig. 6

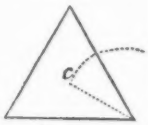


Fig. 7.

Fig. 8.

Wheel-carriages owe their comparative ease of draught to the fact that the center of gravity in the load is moved forward, by the rolling of the wheels, on a level, or parallel with the surface of the road. Each wheel supports its part of the load at the hub. Hence, on a level road, the line of direction falls precisely where the wheels rest on the ground; but if the road ascend or descend, it falls elsewhere; hence the reason that it will run by its own weight down a slope. Whenever a stone or other obstruction occurs in a road, it becomes requisite to raise the center of gravity by the force of the team so as to throw the wheel over it, as shown by fig. 9. One of the reasons thus becomes very plain why a large wheel will run more easily on a rough road than a smaller one, the larger one mounting any stone or obstruction without lifting the load so much out of a level, as shown by the dotted lines in the annexed figures, (figs. 9 and 10.) Another reason is, the large wheel does not sink into the smaller cavities in the road.

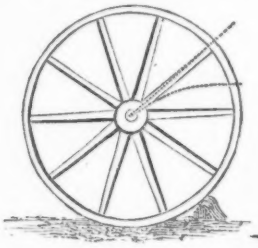


Fig. 9.

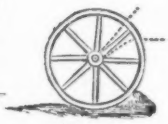


Fig. 10.

When a load is carried on the shoulder, it should be so placed that the line of direction may pass directly through the shoulder or back down to the feet, fig. 11. An inexperienced person will sometimes place a bag of grain as shown in fig. 12. The line falling outside his feet, he is compelled to draw downwards with great force on the other end of the bag. A man who carries a heavy pole on his shoulder should see that the center is directly over his shoulder, otherwise he will be compelled to bear down upon the lighter end, and thus add in an equal degree to the weight upon his shoulder.

Fig. 11.

Fig. 12.

Editor's Table.

Our January Number is now before you, kind reader, and it is a specimen of what we intend our paper shall be each month during the year 1852; differing only in this respect, that we design to make each number better than its predecessor. Already we have received largely increased clubs from many places, and our friends in all sections of the country are doing even more perhaps, than we had a right to expect. Without such generous aid from the friends of Rural Progress, we could not furnish the Genesee Farmer at such a low price; with it, we intend to give our readers at least one of the best agricultural papers in the world, for the small sum of three shillings a year to clubs of eight or more.

We invite all to show this number to their friends, and we will supply extra numbers to those who wish them. We often receive letters inquiring on what conditions we send to clubs—whether all are required to be sent to the same office, &c. The *only rule* we have, is to send our Journal to clubs in such way and manner as will *best suit the convenience of our subscribers.*

Agricultural Report from the Patent Office, for 1850.—This is a well filled volume of 579 pages, nearly all of which are occupied with original communications from over one thousand practical farmers residing in all the States of the Union, with one exception. Eight thousand circular letters were sent out from the Agricultural Department; and answers were received in return enough to fill two volumes of 1000 pages each. To re-write and condense this mass of generally badly written manuscript, so as to express its substance in one-fourth the words, and print it on 500 pages, was a labor which but few can appreciate. Under the circumstances of the case, it was impossible to do full justice to so many correspondents; but whoever will carefully read the Report from beginning to end, can hardly fail to find a great deal to instruct and interest him. Congress has ordered 130,000 copies to be printed and bound for general distribution, and no one should indulge the least hesitancy in writing to the representative in Congress from his district for a copy. The whole is already stereotyped, and if another 100,000 copies should be printed for gratuitous distribution over our thirty-one States and five Territories, it would cost only $33,000 of the *fifty millions* now annualy expended by Congress. The great farming interest shares less in the funds of the General Government than any other, because farmers ask for nothing whatever. However the fact may be regarded by our readers, more than three-fourths of the fifty-two millions which will be paid into the National Treasury in the year 1851, will be dug from American soil, and far more to its injury than is generally believed.

The Report for 1850 does not contain the agricultural statistics of the U. S. Census of that year, for they were not collated and ready for the press. Among its essays is one of considerable length, on *"The Study of Soils,"* from the pen of the proprietor of this journal. Of the merits of this performance it does not become us to speak; but we do not hesitate to commend a paper written by Mr. J. J. Thomas, of Macedon, N. Y., on *"Fruit Culture,"* a valuable contribution to our popular literature on that subject. The aim in preparing the document, has been to make it useful to plain, practical farmers, and not one line has been inserted for show. Farmers are its authors, and they will know how to estimate its value.

Our friends ordering the Farmer will be particular in giving the name of the Post Office, County, and State; also, in writing names plain, as by this much perplexity may be avoided to ourselves and subscribers.

Terms—Fifty Cents a year for single copies; *five copies* for $2, being *forty cents each;* and *eight* copies for $3, being *three shillings each,* and any greater number at the same rate.

Many articles, some of them in type, we are compelled to omit; among them several answers to inquiries, which will appear in our next.

Inquiries and Answers.

Cure for Garget in Cows.—Your subscriber, Mr. Greaves, inquires for a cure for Garget in cows. For the benefit of Mr. G. and others, I would say that a piece of poke root (or skoke root, as it is sometimes called,) the size of a walnut, given in a potato or apple occasionally, will cure. Give three mornings, and skip three, until a cure is effected.

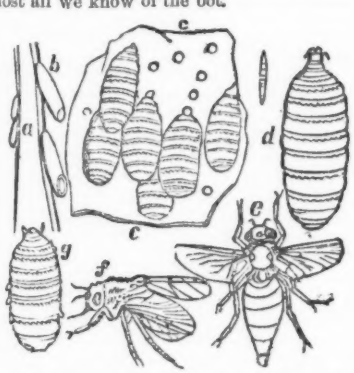
For a preventative, give your cows a little saltpetre with their salt, say two pounds to a bushel of salt. *Oneida Lake, Nov.*, 1851.

A strong decoction of smart weed applied to the udder will assist in the cure. We have received nearly a score of letters in answer to the inquiry on this subject, all nearly similar to the above.

BOTS AND COLIC IN HORSES.—Myself, as well as others, would be pleased to see some of the best remedies (those that can be relied on,) for the Bots or Grubs, and the Colic, in horses. We are much perplexed sometimes to know how and what to administer for the relief of that noble animal. EDW. R. COKE.—*Burnt Ordinary, Va.*, 1851.

We have no doubt that many horses have been doctored for the Bots, and perhaps some have died under the treatment, while others have recovered in spite of it, when colic, constipation, inflamation of the bowels, or some other disease, has been the cause of all the difficulty. "*Bots*" is a favorite theme with horse doctors of more pretensions than knowledge. The best English authorities agree in stating that the Bots is never injurious to the horse, causing no disease, or even symptoms of disease, while others claim that they are injurious. But even if this is so, we hardly know how the insect is to be dislodged from the stomach, for COLE says they have lived in rum twenty-four hours, a decoction of tobacco eleven hours, spirits of tupentine forty-five minutes, and in brine ten hours, without any effect. Their entering the stomach may be prevented to some extent by rubbing the parts where the eggs are observed, with a cloth and warm water, or applying grease or oil. To make the matter plain, we copy the full description and engraving, showing the fly, the egg, and the bots as they are attached to the stomach, from YOUATT's work on the Horse:

"In the spring and early part of the summer, horses are much troubled by a grub or caterpillar, which crawls out of the anus, fastens itself under the tail, and seems to cause a great deal of itching or uneasiness. Grooms are sometimes alarmed at the appearance of these insects. Their history is curious, and will dispel every fear in regard to them. We are indebted to Mr. Bracy Clark for almost all we know of the bot.



a and *b*, the eggs of the gad-fly adhering to the hair of the horse.

c, The appearance of the bots on the stomach, firmly adhering by their hooked mouths. The marks or depressions are seen which are left on the coat of the stomach when the bots are detached from their hold.

d, The bot detached.

e, The female of the gad-fly, of the horse, prepared to deposit her eggs.

f, The gad-fly by which the red bots are produced.

g, The smaller, or red bot.

"A species of gad-fly, *e*, the œstrus equi, is in the latter part of the summer exceedingly busy about the horse. It is observed to be darting with great rapidity towards the knees and sides of the animal. The females are depositing their eggs on the hair, and which adhere to it by means of a glutinous fluid with which they are surrounded (*a* and *b*). In a few days the eggs are ready to be hatched, and the slightest application of warmth and moisture will liberate the little animals which they contain. The horse in licking himself touches the egg; it bursts, and a small worm escapes, which adheres to the tongue and is conveyed with the food into the stomach. There it clings to the cuticular portion of the stomach, *c*, by means of a hook on either side of its mouth; and its hold is so firm and so obstinate, that it must be broken before it can be detached. It remains there feeding on the mucus of the stomach during the whole of the winter, and until the end of the ensuing spring; when, having attained a considerable size, *d* and being destined to undergo a certain transformation, it disengages itself from the cuticular coat, is carried into the villous portion of the stomach with the food, passes out of it with the chyme, and is evacuated with the dung.

"The *larva* or maggot seeks shelter in the ground, and buries itself there; it contracts in size, and becomes a chrysalis or grub, in which state it lies inactive for a few weeks, and then, bursting from its confinement, assumes the form of a fly. The female, becoming impregnated, quickly deposits her eggs on those parts of the horse which he is most accustomed to lick, and thus the species is perpetuated.

"There are several plain conclusions to be drawn from this history. The bots can not, while they inhabit the stomach of the horse, give the animal any pain, for they have fastened on the cuticular and insensible coat. They cannot stimulate the stomach, and increase its digestive power, for they are not on the digestive portion of the stomach. They cannot, by their roughness, assist the trituration or rubbing down of the food, for no such office is performed in that part of the stomach—the food is softened, not rubbed down. They cannot be injurious to the horse, for he enjoys the most perfect health when the cuticular part of his stomach is filled with them, and their presence is not even suspected until they appear at the anus. They cannot be removed by medicine, because they are not in that part of the stomach to which medicine is usually conveyed; and if they were, their mouths are too deeply buried in the mucus for any medicine, that can be safely administered, to affect them: and, last of all, in due course of time they detach themselves, and come away. Therefore, the wise man will leave them to themselves, or content himself with picking them off when they collect under the tail and annoy the animal.

"The smaller bot, *f* and *g*, is not so frequently found.

"Of inflamation of the stomach of the horse, ex-

cept from poisonous herbs, or drugs, we know little. It rarely occurs. It can with difficulty be distinguished from inflammation of the bowels; and in either case the assistance of the veterinary surgeon is required."

The English remedy for colic, is turpentine, opium, and aloes, given in warm strong beer—4 drams of aloes, 1 oz. of turpentine, 1 oz. laudanum, in 1 pint of beer. YOUATT says this will generally cause the disease to cease almost as suddenly as it appeared. If the disease should not yield speedily, he recommends bleeding to prevent inflammation. The belly should be well rubbed with a brush or warm cloth, and clysters of warm water should be injected. We have already devoted so much space to this article, that we can not say more of the colic in this number, but may in our next.

PREPARING BONES FOR MANURE.—I wish to gain information through the columns of your excellent paper, as to the best mode of using bones as a manure; also of preparing them for use. By doing so, you will oblige A SUBSCRIBER.—*Adams Center, N. Y.*, 1851.

We have on file several inquiries similar to the above. We shall endeavor to answer one and all. Bones should be crushed to fragments before being applied to the land, otherwise they decay very slowly. Ten bushels of crushed bones will show a better effect, for many years, than one hundred bushels uncrushed. It is no uncommon thing in England to see a double crop of turnips as the effect of the application of bone dust, even twelve years after its application. Bones, if well seasoned, can be ground in a plaster mill. We have known them to be kiln-dried for this purpose. If they are fresh, the work of crushing can better be done at an oil mill.

Another mode of preparation is to boil the bones in a strong lye until they fall to a powder, then mix the lye and bones with fine dry loam. After the water has evaporated, the mixture may be drilled in with wheat, turnips, and other crops; or sown broadcast. A small quantity of bones applied in this way, produces surprising effects.

Still another method of preparing bones is to dissolve them in a solution of oil of vitriol. Two bushels of bone dust dissolved in vitriol, will produce a greater effect the first year than twelve applied as dust. Sulphuric acid (oil of vitriol) costs but from 2½ to 3 cents per pound. We give the process in detail, in the words of Professor NORTON:—"To every 100 lbs. of bones, about 50 to 60 of acid are taken; if bone dust is used, from 25 to 45 lbs. of acid is sufficient. The acid must be mixed with two or three times its bulk of water, because if applied strong it would only burn and blacken the bones without dissolving them.

"1. The bones are placed in a tub, and a portion of the previously diluted acid poured upon them. After standing a day, another portion of acid may be poured on; and finally the last on the third day, if they are not already dissolved. The mass should be often stirred.

"2. Another good way is to place the bones in a heap upon any convenient floor, and pour a portion of the acid upon them. After standing half a day, the heap should be thoroughly mixed, and a little more acid added; this to be continued so long as necessary. It is a method which I have known to prove very successful.

"In either case the bones will ultimately soften and disolve to a kind of paste; this may be mixed with twenty or thirty times its bulk of water, and applied to the land by means of an ordinary water cart. Used in this way, it produces a wonderful effect upon nearly all crops.

"A more convenient method in most cases is to thoroughly mix the pasty mass of dissolved bones with a quantity of ashes, peat earth, sawdust, or charcoal dust. It can then be sown by hand, or dropped from a drill machine. Two or three bushels of these dissolved bones, with half the usual quantity of yard manure, are sufficient for an acre. This is therefore an exceedingly powerful fertilizer. One reason for its powerful effect is, that the bones are, by dissolving, brought into a state of such minute division, that they are easily and at once available for the plant. A peculiar phosphate of lime is formed, called by chemists a *superphosphate*, which is very soluble; and in addition to this we have the sulphuric acid, of itself an excellent application to most soils."

TO PREVENT HOGS ROOTING.—I saw in a number of the Prairie Farmer, a short time ago, an article stating that by cutting the tendons (or some other term,) that supports the rim of a hogs nose, it destroys their properties of rooting, without injuring the hog. If this is the case, and you could and would let me know how it can be done, you would oblige me, and probably a good many of the readers of the Genesee Farmer. H. JENNINGS.—*Wyocena, Wis.*, 1851.

We have never seen the experiment tried of cutting the nasal tendon, or stout muscle on the top of a pig's nose, to prevent his rooting. The probability is that the remedy will prove successful. It operates on the principle of "ham-stringing." Cut square across the top of the nose a little back of the rim.

WEEVIL.—The insect contained in a letter from J. D. DAVIS, of Reading Center, N. Y., was so compressed and broken, that all we can say is that it was a fly and not a weevil. We will give some account of this insect soon.

LEACHED ASHES AND ROTATION OF CROPS.—Are leached ashes that have laid from thirty to fifty years exposed to the weather, worth hauling five miles as a fertilizer? If so, how should they be applied?

The following system of rotating crops, I have adopted, and thus far with an increase both in quantity and quality. Think you the advantage will be lasting? For wheat, I have three lots; one of which I summer fallow, another take a crop of wheat from, and the third I pasture—always seeding with clover, and applying about two hundred bushels of plaster to the acre. As I summer fallow the lot which I pastured the preceding year, I have a good turf and a heavy crop of clover to turn under. I do not calculate to pasture my fallow till after it is broken, but it is hard sometimes to keep the cows out. For other crops I have no system, only that I plow and grow three crops of different kinds—then seed, plaster, and manure, for meadow or pasturing, three years. A SUBSCRIBER OF THE TOWN OF G.

On good roads it will pay to haul leached ashes five miles; they should, however, be mixed with lime before their application, unless the soil abounds in calcareous matter. Eventually, your wheat and clover rotation will exhaust your land, if you do not renovate it occasionally with manure or ashes, to restore potash and bone earth removed in the seeds of wheat.

Clover draws the earthy ingredients from the subsoil for the benefit of wheat plants; but the supply will not last a century without adequate restitution. Beware of "clover-sick" fields.

GAS LIME.—Will you be so kind as to inform me of what value the gas limes are to put on to land to grow fruit trees, that needs lime in some form or other. At this place I can obtain stone lime, fresh and fine, for $10 per hundred bushels. At the gas works in this city, they have a large quantity of lime that they have used for purifying the gas, and which was the best of the Onondaga lime, which they will sell cheap. There is no one here to tell me about it, and not seeing any article in the Farmer, I write you that I may get some correct information.

The soil is a strong clay loam that has produced wheat twenty-five years with only two or three crops of clover, which now yields about twenty-five bushels to the acre. But as I am to put it to different purposes, I thought I had better supply some of the phosphates first. It is troubled with grubs—the larvæ of the May bug, or a large white grub with brown head—that gnaw the roots of small trees till they die. I have lost $500 worth of plants this year by its depredations. To destroy this insect would be gratifying to me. I have sown thirty bushels of salt to the acre, and plowed it under. I intend to plow it again, following with the subsoil plow, that I may make the soil sixteen inches in depth.

Now, for manure we shall use muck from a swamp, that has been sweetened with lime and salt, adding some plaster to supply the sulphur.

I will close this letter, which is much longer than I intended to write at first, but I feel that I am excused when I read some of the interesting articles on the relation of science to agriculture that may be found in your paper. CHARLES P. COWLES.—*Syracuse, N. Y., Oct.*, 1851.

There is more or less organized nitrogen in the coal from which gas is made, and the lime used to purify it usually contains ammmoniacal compounds which, so far as they are present, are far more valuable for agricultural purposes than lime itself. Buy the gas lime as cheap as you can, and test its value by careful experiment.

MULES.—Will some of your correspondents inform me through the columns of your valuable paper, why mules are not reared to a greater extent in this State. It is stated that they are very profitable, easily reared, and a ready sale at two years old, at prices ranging from $75 to $100 each. K. —*Oneida Lake, N. Y., Nov.*, 1851.

HORTICULTURAL.

(R. L. C., King's Ferry, N. Y.) The *Filberts, Madeira nuts*, and *Almonds*, of the shops will grow if sound and fresh. Sow in the fall, in any good, dry, friable soil, cover two inches deep. If you cannot plant in the fall, lay them in a thin layer in the ground, and cover with earth three or four inches deep till spring. *Doucain and Paradise Stocks* are not raised from seed, but layers; most of those used in this country are imported. *Mahaleb* seeds can scarcely be procured in this country, but the stocks can in the nurseries.

(F. S., King's Ferry.) The various kinds of dwarf stocks can be obtained in the nurseries here, at $2 to $3 per 100. *Mazzard cherry* and *Pear stocks* can be obtained at prices you will find in the nurserymen's catalogues. *Spanish chestnuts* are not to be had here; young plants can.

(S. W. R.) The "Fruit Garden" is sold at $1.25, and the postage to you would be 20 cts. if pre-paid. The present postal law is unfavorable to the transmission of books by mail.

WILL you be so kind as to answer a few inquiries in the Genesee Farmer, and oblige a subscriber.

1. Does the Angers Quince produce fruit superior to the Orange or Portugal?

2. Is the Striped Madelaine Pear tree as hardy and productive as the Madelaine? Does it succeed well on Quince?

3. Is it better to whip-graft Quince stocks with pears that have failed the first season to grow from bud, and transplanted in the fall again, than wait until the next fall and bud again? S. B.—*Susquehanna Co., Pa., Nov.*, 1851.

1. We have not yet fruited the Angers Quince, but it is spoken of by cultivators of Angers as being very good.

2. The Striped Madelaine pear is, according to our experience, as hardy as the common one, but not quite so vigorous. It is productive and succeeds well on the quince.

3. You may get a tree *sooner* by grafting next spring the stocks on which the buds have failed the past summer, but you will have better trees in the end, if you wait and bud them next season, especially if they be transplanted. If intended to graft, they ought not to have been transplanted.

THE NURSERY BUSINESS IN IOWA.—A correspondent writes us from Maquoketa, Iowa—"There is one great drawback to the nursery business here, and that is *winter killing*. There is not more than one-third the varieties of apples that will stand root-grafting in this latitude, 42½ deg. Some nurserymen have lost thousands of dollars by it."

Will some of our friends in the west, who have tested the hardiness of varieties in climates similar to Jackson county, Iowa, communicate some of their experience. This matter touches upon a subject of great importance to the fruit growers of this country, viz., the *adaptation of varieties to certain climates and localities.*

CHARLES SCRIBNER, NEW YORK,

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"Important in its subject, careful and ample in its details, and charmingly attractive in its style—it gives all the information that would be desired as to the selection of sites, the choice of appropriate styles, the particulars of plans, materials, fences, gateways, furniture, warming, ventilation, specifications, contracts, &c.; concluding with a chapter on the intellectual and moral effect of rural architecture."—*Hartford Religious Herald.*

THE FRUIT GARDEN. THIRD EDITION. A Treatise intended to Illustrate and explain the Physiology of Fruit Trees, the Theory and Practice of all operations connected with the Propagation, Transplanting, Pruning, and Training of Orchard and Garden Trees, as Standards, Dwarfs, Pyramids, Espaliers, &c., the laying out and arranging different kinds of Orchards and Gardens, the selection of suitable varieties for different purposes and localities, gathering and preserving Fruits, Treatment of Disease, Destruction of Insects. Descriptions and Uses of Implements, &c., illustrated with upwards of one hundred and fifty figures, representing different parts of Trees, all Practical Operations, Forms of Trees, Designs of Plantations, Implements, &c. By P. BARRY, of the Mount Hope Nurseries, Rochester, New York. 1 vol. 12 mo.

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"His work is one of the completest, and, as we have every reason for believing, most accurate to be obtained on the subject."—*N. Y. Evangelist.*

"A concise manual of the kind here presented has long been wanted, and we will venture to say that, should this volume be carefully studied and acted upon by our industrious farmers, the quantity of fruit in the State would be doubled in five years, and the quality, too, greatly improved. Here may be found advice suited to all emergencies, and the gentleman farmer may find direction for the simplest matters, as well as those which trouble older heads. The book, we think, will be found valuable."—*Newark Daily Advertiser.*

"It is full of directions as to the management of trees, and buds, and fruits, and is a valuable and pleasant book."—*Albany Evening Journal.*

"The work is prepared with great judgment, and founded on the practical experience of the Author—is of far greater value to the cultivator than most of the popular compilations on the subject."—*N. Y. Tribune.*

"This Book *supplies* a place in fruit culture, and that is saying a great deal, while we have the popular works of Downing, Thomas, and Cole. Mr. Barry has then a field to himself which he occupies with decided skill and ability."—*Prairie Farmer.*

New York, Jan. 1, 1852.

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Hertfordshire Pearmain,	*Early Joe,*
Fameuse,	*Fall Pippin,*
Bourassa,	*Holland Pippin,*
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JAMES H. WATTS.

N. B.—In all cases where it is possible, I will send samples of the "Northern Spy" apple. Reference can be made to Mr. VICK, of the "Farmer."

Rochester, Jan., 1852.

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THE undersigned has been appointed sole agent in New York, for the sale of McCormick's Patent Reapers and Mowing Machines. Farmers and others desirous of purchasing these celebrated machines, are requested to forward their orders at an early date, that they may be supplied in due time. These machines received the Gold Medal at the World's Fair, also, the first premium at every Fair in the United States, where they have been exhibited.

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New York, Jan., 1852.

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January 1, 1852. Genesee Farmer Office.

Winter Exhibition of Fruit.

☞ It is proposed to have a meeting, at Mr. FOGG's Seed Store, on Saturday, 17th January, 1852, for the purpose of having an Exhibition of Winter Fruits. It will be remembered that such an one was held last January, which resulted in a fine show. The Growers of Fruit in Monroe, and all other counties, are requested to be present with specimens, which, after exhibition, will be sent to Albany for a like exhibition before the State Society, at their annual meeting on the 20th January.

The Practical and Scientific Farmer's own Paper.

THE GENESEE FARMER,

A MONTHLY JOURNAL OF

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VOLUME XIII, FOR 1852.

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December, 1851. *Rochester, N. Y.*

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THE CURSE OF CLIFTON: A Tale of Expiation and Redemption. By Mrs. E. D. E. N. SOUTHWORTH, author of "The Deserted Wife," &c., &c.

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N. B.—Subscriptions for membership may be sent by mail to my address, and I will return Certificates and Bulletins, giving all the particulars of the Institution, for Rochester and vicinity, and pay all postages.

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January, 1852.

STEREOTYPED BY J. W. BROWN, ROCHESTER, N. Y.